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ABSTRACT

This comprehensive profile of students with disabilities enrolled in postsecondary education is based on four national surveys which examined the following questions: (1) how represented are students with disabilities in postsecondary education?; (2) which high school students with disabilities gain access to postsecondary education?; (3) how well do college students with disabilities persist to degree attainment?; and (4) among college graduates with disabilities, what are the early labor market and graduate school outcomes? Among major findings are the following: 6 percent of college students identified themselves as having a disability; 63 percent of high school graduates with disabilities (compared to 72 percent of those without disabilities) enrolled in postsecondary education; overall, students with disabilities were much less academically prepared than others for postsecondary education; students with disabilities were less likely to persist to degree attainment; but post-college outcomes for students with disabilities who did earn bachelors degrees were quite similar to those of other students. Following an introductory chapter, individual chapters present data tables and text about each of the four questions examined. Appendices present supplemental tables, a glossary, and technical notes. (Contains 13 references.) (DB)

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Postsecondary Education Descriptive Analysis Reports

Students With Disabilities in Postsecondary Education: A Profile of Preparation, Participation, and Outcomes

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NATIONAL CENTER FOR EDUCATION STATISTICS

Statistical Analysis Report June 1999

Postsecondary Education Descriptive Analysis Reports

Students With Disabilities in Postsecondary Education: A Profile of Preparation, Participation, and Outcomes

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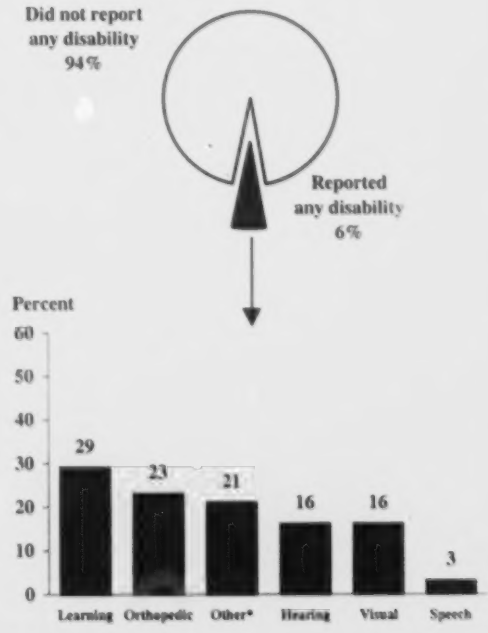
Executive Summary

This report provides a comprehensive profile of students with disabilities enrolled in postsecondary education. It is based on an analysis of four different surveys conducted by the National Center for Education Statistics, which were used to address the following four issues: 1) representation of students with disabilities enrolled in postsecondary education; 2) who among high school students with disabilities gains access to postsecondary education; 3) among those who enroll in postsecondary education, how well do they persist to degree attainment; and 4) among college graduates, what are the early labor market outcomes and graduate school enrollment rates of students with disabilities. The following is a summary of the key findings for each of the four main issues addressed in the report.

How Represented Are Students With Disabilities in Postsecondary Education?

In the 1995–96 academic year, as part of the National Postsecondary Student Aid Study (NPSAS), a nationally representative sample of about 21,000 undergraduates were asked: "Do you have any disabilities, such as hearing, speech, mobility impairment, or vision problems that can't be corrected with glasses?" About 6 percent replied "yes" (figure A). When asked about specific disabilities, among the 6 percent of undergraduates who reported any disabilities, 29 percent said they had a learning disability; 23 percent reported having an orthopedic impairment; 16 percent reported a noncorrectable vision impairment; 16 percent were hearing impaired or deaf; and 3 percent reported a speech impairment. One in five (21 percent) reported having some "other health-related" disability. Compared with students without disabilities, students with disabilities were more likely to be men, to be older, and were more likely to be white, non-Hispanic.

Figure A—Percentage of 1995–96 undergraduates who reported a disability, and among those with disabilities, the percentage reporting each disability type



*Any other health-related disability or impairment.

NOTE: Percentages do not sum to 100 because some students reported multiple disabilities.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Undergraduate Data Analysis System.

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Compared with their counterparts who reported no disabilities, students with disabilities differed in the types of institutions they attended. They were less likely to be enrolled in public 4-year institutions, equally likely to be enrolled in private, not-for-profit 4-year institutions, and more likely to be enrolled in subbaccalaureate institutions such as public 2-year colleges. There were no apparent differences, however, between undergraduates with and without disabilities with respect to their general fields of study. For example, roughly one-fifth of students with and without disabilities (17 and 20 percent, respectively) were in business-related fields; 18 and 15 percent, respectively, were in humanities; and 11 and 13 percent, respectively, were in health fields.

With respect to financing their education, students with and without disabilities did not differ to a great extent in either the likelihood of receiving financial aid or in the average total amount of aid received. However, when examining specific institutional sectors and specific types of financial aid received, differences did emerge, especially among students enrolled in public 4-year colleges. For example, among dependent students (i.e., those who are financially dependent on their parents) in public 4-year colleges, students with disabilities were less likely to receive financial aid (48 versus 59 percent), whether in the form of grants (31 versus 42 percent), loans (29 versus 38 percent), or work study (4 versus 8 percent). Since the award of federal financial aid is based on a student budget made up of the student's financial need and the price of the institution, it is possible that dependent students with disabilities attending public 4-year colleges were enrolled in lower priced institutions than their counterparts without disabilities. Differences may also be due in part to the fact that some students with disabilities receive supplemental income such as Supplemental Security Income (SSI) and Social Security Disability Insurance (SSDI).

Who Gets to College?

Based on data from a nationally representative sample of students who were in the eighth grade in 1988 (National Education Longitudinal Study of 1988), students with disabilities were less likely to enroll in postsecondary education among those who completed high school by 1994 (table A). As of 1994, about 2 years after most finished high school, approximately 63 percent of students with disabilities had enrolled in some form of postsecondary education, compared with about 72 percent of students without disabilities. Among those who enrolled, nearly one-half of students with disabilities (45 percent) enrolled in public 2-year institutions, compared with one-third of students without disabilities. Conversely, students with disabilities were less likely to enroll in the 4-year sector (42 percent) than their counterparts without disabilities (62 percent).

When students were ranked according to how qualified they were for admission to a 4-year college, students with disabilities were much less likely to be even minimally qualified.[1] Among those who were qualified, students with and without disabilities were just as likely to enroll in some form of postsecondary education. Students with and without disabilities who were very to highly qualified for admission to a 4-year college (had scores in the top 10 to 25 percent of entering 4-year college students) enrolled at similar rates. However, among students who were ranked as "minimally to somewhat" qualified for admission to a 4-year college (had scores in the top 50 to 75

[1]This was based on an index score of grades, rank in school, GPA, NELS composite test scores, and SAT/ACT scores of the top 75 percent of students actually admitted to a 4-year institution. To be minimally qualified, students had to be ranked at or above the 54th percentile in their class, have a GPA of 2.7 or higher in academic courses, have a combined SAT score of 820 or above (or ACT composite of 19 or above), or score at the 56th percentile or higher on the 1992 NELS mathematics and reading aptitude test.

Table A—Among 1988 eighth graders who completed high school, the percentage who enrolled in postsecondary education by 1994, and percentage distribution according to type of institution, by disability status and type

		4-year institutions			Other institutions		
	Total enrolled	Total	Public	Private, not-for-profit	Total	Public 2-year	Other[1]
Total	70.4	59.4	39.8	19.6	40.6	34.4	6.2
Does not have a disability	71.7	61.5	41.3	20.2	38.6	33.3	5.3
Has a disability	62.8	42.0	28.1	14.0	58.0	44.9	13.1
Visual impairment	70.4	48.4	30.9	17.6	51.6	44.2	7.4
Hearing impairment or deaf	60.2	39.8	33.5	6.3	60.2	47.0	13.2
Speech impairment	58.5	49.0	34.5	14.5	51.0	47.6	3.5
Orthopedic impairment	73.9	71.4	53.6	17.8	28.7	23.6	5.1
Learning disability	57.5	28.2	17.6	10.5	71.8	53.9	17.9
Other disability or impairment[2]	65.9	44.3	28.4	15.9	55.7	42.8	13.0

[1]Students enrolled in private, for-profit institutions; public less-than-2-year institutions; or private, not-for-profit less-than-4-year institutions.

[2]Parent reported student had any other disability, including health problems, emotional problems, mental retardation, or other physical disabilities, and had received services for it.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up Survey, 1994 (NELS:88/94), Data Analysis System.

percent of entering 4-year college students), students with disabilities were less likely than their counterparts without disabilities to enroll in the 4-year sector (41 versus 54 percent), and more likely to enroll in public 2-year institutions (35 versus 25 percent). In other words, despite being at least minimally qualified for admission to a 4-year institution, students with disabilities were less likely to enroll in the 4-year sector. Research has shown that a majority of students who enroll in the 2-year sector with the intentions of later transferring to a 4-year institution do not transfer. Therefore, these students may be reducing their chances of earning a bachelor's degree.

Taking a closer look at the students who enrolled in any postsecondary education, there were a number of apparent differences with respect to high school academic preparation and performance between students with and without disabilities. Those with disabilities were more likely to have taken remedial mathematics and English courses in high school, less likely to have taken advanced placement courses, had lower high school GPAs, and had lower average SAT entrance exam scores.

Overall, with respect to gaining access to higher education, the data indicate that students with disabilities fall behind their counterparts without disabilities in their high school academic preparation for college. As a consequence, students with disabilities are less likely to be academically qualified for admission to a 4-year college and among those who enroll in postsecondary education, students with disabilities may be less prepared to undertake college-level courses.

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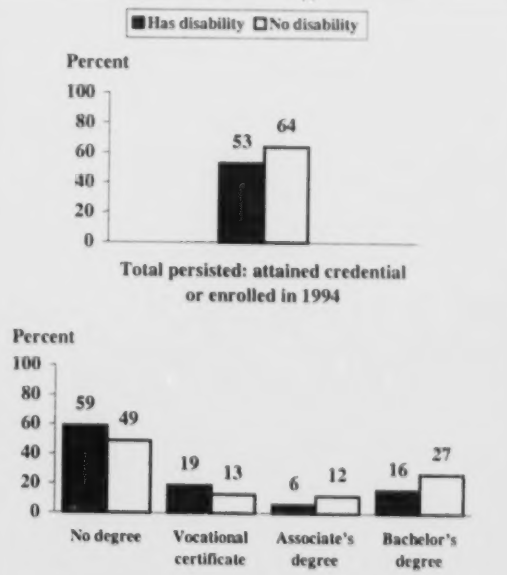
Who Stays in College?

A survey of undergraduates who enrolled in postsecondary education for the first time in 1989–90 (Beginning Postsecondary Students) and who were last surveyed in 1994 indicates that students who reported any disabilities were less likely than their counterparts without disabilities to have stayed enrolled or earned a postsecondary degree or credential within 5 years (figure B). As of 1994, 53 percent of students with disabilities had attained a degree or vocational certificate or were still enrolled, compared with 64 percent of their counterparts without disabilities. Among students with disabilities, 16 percent attained a bachelor's degree; 6 percent attained an associate's degree; and 19 percent earned a vocational certificate. The corresponding percentages for students without disabilities were 27 percent, 12 percent, and 13 percent, respectively.

Figure B—Percentage of 1989–90 beginning postsecondary students according to their persistence status in 1994 and highest degree attained, by disability status



NOTE: Percentages may not sum to 100 due to rounding.

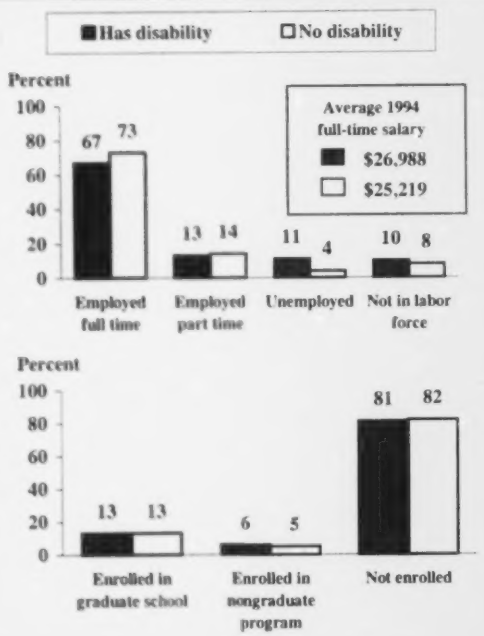
SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

The postsecondary outcomes of students with disabilities, however, may not be directly comparable to those students without disabilities. Compared to their counterparts without disabilities, those with disabilities who first enrolled in postsecondary education in 1989–90 were more likely to have attributes associated with lower rates of persistence and degree attainment. For example, students with disabilities were more likely to have delayed their postsecondary enrollment a year or more after finishing high school (43 versus 32 percent). They were also more likely to have completed high school through earning a GED (i.e., they passed the General Education Development exam) or alternative high school credential (12 versus 6 percent). Corresponding to being older, students with disabilities were also more likely to have dependents other than a spouse (25 versus 13 percent). All of these attributes are associated with lower persistence and degree attainment rates. Thus, in addition to the obstacles they may have experienced related to their disabilities, students with disabilities were also more likely to have other experiences and circumstances that potentially conflicted with their schooling. Despite such impediments, however, more than half of students with disabilities had persisted in postsecondary education: 41 percent had earned a credential, and an additional 12 percent were still enrolled in 1994.

How Do College Graduates Fare?

While students with disabilities are less likely to persist in postsecondary education and attain a credential, those who earn a bachelor's degree appear to have relatively similar early labor market outcomes and graduate school enrollment rates as their counterparts without disabilities. Based on data from a cohort of students who earned bachelor's degrees in 1992–93 (Baccalaureate and Beyond), as of April 1994, most students, regardless of disability status, reported that they were working (figure C). Students with disabilities however, were more likely to be unemployed (11 versus 4 percent). Among college graduates who were working, the annual full-time salaries of students with and without disabilities did not differ significantly. There was also no difference in the likelihood of college graduates with and without disabilities reporting that their job was related to their degree: 58 percent of students with disabilities and 55 percent of those without disabilities reported that their job was closely related to their bachelor's degree. Finally, similar proportions of college graduates with and without disabilities had enrolled in graduate school within 1 year after earning their bachelor's degrees.

Figure C—Among 1992–93 bachelor's degree recipients, percentage distribution according to employment status and graduate school enrollment, by disability status



NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, First Follow-up (B&B:93/94), Data Analysis System.

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Foreword

This report was prepared for and funded by the Office of Special Education and Rehabilitation Services (OSERS) at the U.S. Department of Education. The report describes and analyzes the experiences of students with disabilities enrolled in postsecondary education. There are four sections to the report: 1) a descriptive profile of undergraduates with disabilities who are enrolled in postsecondary education; 2) an analysis of who gains access to postsecondary education among high school students with disabilities; 3) a discussion of how well students with disabilities persist to degree attainment; and 4) a look at the early employment and graduate school enrollment of bachelor's degree recipients.

In order to address these topics, the report uses data from four surveys conducted by the National Center for Education Statistics (NCES). The descriptive profile of undergraduate students with disabilities is based on data from the 1995–96 National Postsecondary Student Aid Study (NPSAS:96), a nationally representative sample that includes students enrolled in all types of postsecondary institutions, ranging from 4-year colleges and universities to less-than-2-year vocational institutions.

The data used in the analysis of access to undergraduate education are from the National Education Longitudinal Study of 1988 (NELS:88/94), a survey that began in 1988 with a nationally representative sample of eighth graders who were subsequently followed up every 2 years through 1994. The third and last follow-up survey was conducted 2 years after most of the cohort graduated high school and provides information on their enrollment in postsecondary education, as well as their high school academic experiences.

The discussion on persistence and attainment is based on data from the 1989–90 Beginning Postsecondary Students Longitudinal Study (BPS:90/94), the longitudinal component of the NPSAS:90 survey. The BPS:90/94 sample consists of students who enrolled in postsecondary education for the first time during the 1989–90 academic year. The BPS cohort was subsequently followed up in 1992 and 1994. The survey provides a wide range of information regarding student persistence and degree attainment 5 years after the students first enrolled.

Finally, the analysis of college graduates is based on data from the 1993–94 Baccalaureate and Beyond Longitudinal Study (B&B:93/94). B&B:93/94 is a nationally representative sample

of students who completed their bachelor's degrees in the 1992–93 academic year, a subsample of NPSAS:93. The First Follow-up Survey was conducted in 1994, 1 year after graduation.

The estimates presented in the report (mostly percentages) were produced using the NCES Data Analysis System (DAS) for each of the four surveys. The DAS is a microcomputer application that allows users to specify and generate their own tables. The DAS produces design-adjusted standard errors necessary for testing the statistical significance of differences shown in the tables. For more information regarding the DAS, readers should consult appendix D of this report.

Acknowledgments

The authors wish to thank the Office of Special Education and Rehabilitation Services (OSERS) for funding this report. In particular, Hugh Berry provided guidance in its planning and reviewed the report drafts. In addition, Debra Price-Ellingstad, Sean Sweeny, David Keer, Harold Kay and Edward Anthony of OSERS reviewed the final report. Ellen Bradburn from Education Statistics Services Institute provided an in-depth substantive and methodological review. We also wish to thank Steve Broughman, Drew Malizio, and Marilyn McMillen of NCES for reviewing the final report. A special thanks to Vickie Barr, Director of the HEATH Resource Center, National Clearinghouse on Postsecondary Education for Individuals with Disabilities, for her careful and thoughtful review of the final report.

At MPR Associates, Andrea Livingston edited the report, Barbara Kridl coordinated its production, Francesca Tussing and Mary Mack formatted text and graphics, and Karyn Madden and Helen Jang proofread and assembled the final document.

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Introduction

In June 1997, President Clinton signed the 1997 Amendments to the Individuals with Disabilities Education Act (IDEA), strengthening the academic expectations and accountability for children with disabilities and guaranteeing their equal access to quality education. The law mandates that the education given to students with disabilities relate more clearly to the general curriculum and that parental involvement be encouraged through regular progress reports.

The passage of IDEA and other laws such as the Rehabilitation Act in 1973 and the Americans With Disabilities Act in 1990, which ensure equal access to education for individuals with disabilities, have catalyzed an increase in postsecondary enrollment among students with disabilities over the past two decades. In 1994, approximately 45 percent of persons 16 or older who reported having a disability had either attended some college or had completed a bachelor's degree or higher. In contrast, 29 percent had reported doing so in 1986 (Eighteenth Annual Report to Congress 1996).

A few large-scale surveys have attempted to study students with disabilities enrolled in postsecondary education. HEATH Resource Center publishes an analysis of full-time college freshmen with disabilities every 2 years. In 1996, the authors of this publication reported that approximately 9 percent of entering college freshmen had a disability (Henderson 1998). Of those, 35 percent had learning disabilities; 22 percent were partially sighted or blind; 21 percent had other disabilities; 10 percent had orthopedic or physical impairments; 12 percent had hearing impairments or were deaf; and 5 percent had speech impairments. In another study, based on data from the National Longitudinal Transition Study (NLTS), the researchers found that students with disabilities were much less likely than those without disabilities to enroll in postsecondary education within 5 years after graduating from high school (Blackorby and Wagner 1996).

Because the relative number of students with disabilities is small and the methods of reporting disabilities vary, data from studies about students with disabilities appear to differ. For the most part, these variations can be explained by differences in reporting methods or survey questions. In appendix A of this report, the findings from other studies are compared with those reported here.

This report uses four different surveys of postsecondary students conducted by the National Center for Education Statistics (NCES) at the U.S. Department of Education to provide a

comprehensive look at the experiences of students with disabilities who continue their education beyond high school. The analysis addresses the following issues and questions:

Profile of Undergraduates

- What proportion of undergraduates report having a disability?
- What are the demographic and postsecondary enrollment characteristics of students with disabilities?
- In what types of institutions are students with disabilities enrolled?
- In which fields of study do undergraduates with disabilities report majoring?
- How do undergraduates with disabilities pay for their education?

Access to Postsecondary Education

- How likely are students with disabilities to enroll in postsecondary education after high school?
- Are students with disabilities as prepared academically for college as students without disabilities?

Persistence and Attainment of a Postsecondary Degree

- What percentage of undergraduates with disabilities persist to completion of a postsecondary degree or credential?
- How do students with and without disabilities differ with respect to characteristics that are associated with postsecondary persistence?

Early Labor Force Experiences and Graduate School Enrollment of College Graduates

- After college graduation are individuals with disabilities as likely as those without disabilities to be working?
- Are college graduates with disabilities working in jobs related to their degrees?
- What are their starting salaries?
- What percentage of undergraduates with disabilities enrolled in graduate school?

Data

In order to discuss the extent to which individuals with disabilities participate in postsecondary education,[1] this report uses data from four nationally representative surveys conducted by NCES. Each survey has a different focus and represents a different population of students.

National Postsecondary Student Aid Study

The 1995–96 National Postsecondary Student Aid Study (NPSAS:96) surveyed a sample of all students enrolled in postsecondary institutions to determine how students and their families pay for their postsecondary education. The survey includes both institutional and self-reported information. In addition to the detailed information about financial aid and other student cost-related information, NPSAS contains a wealth of information about students' backgrounds and experiences in postsecondary education. Identification of students with disabilities in NPSAS and its longitudinal components (the Beginning Postsecondary Students [BPS] Survey and the Baccalaureate and Beyond [B&B] Study, discussed below) is based on the student-reported information.[2] Though a relatively small proportion of NPSAS students identified themselves as having disabilities, the large sample size makes it possible to provide comparisons between students with and without disabilities and, in some cases, across disability types for the 1995–96 school year. This survey was used in this report to profile the undergraduate students with disabilities who were enrolled in postsecondary education during the 1995–96 school year.

National Education Longitudinal Study

The National Education Longitudinal Study of 1988 (NELS:88/94) is a longitudinal survey of a sample representing all students who were in the eighth grade in 1988. The sample was subsequently followed up in 1990, 1992, and 1994. NELS:88/94 tracked the cohort through high school and, for many, into postsecondary education. In the Base Year, NELS:88/94 surveyed the students and their parents, teachers, and counselors. For the Third Follow-up (1994), surveys were administered only to students. This study is appropriate for examining who enrolls in postsecondary education within 2 years after most of the participants finish high school. It also

[1]Includes students at all types and levels of institutions including public and private institutions; less-than-2-year and 2-year institutions; and 4-year colleges and universities.

[2]There is some question as to the reliability of the number of students who reported having a disability in the NPSAS survey compared to those who reported a disability to the postsecondary institution they were attending. In 1993, the Office of Special Education and Rehabilitative Services (OSERS) sponsored the *Survey on Deaf and Hard-of-Hearing Students in Postsecondary Education*. This survey looked at students who had indicated to their postsecondary institutions that they were deaf or hard-of-hearing. OSERS compared their data with those from NPSAS:90 on students who identified themselves as hearing impaired in that survey, and estimated that "only about 8 percent of the students who report that they have a hearing impairment identify themselves to the institution as deaf or hard-of-hearing" (Lewis and Farris 1994).

provides information about students' academic experiences and how prepared they are to enter college.

It should be noted, however, that the sample of eighth graders in NELS:88/94 excluded the following groups: 1) students with severe mental disabilities; 2) those whose knowledge of English was not sufficient to complete the tests; and 3) students with severe physical or emotional problems that would have made it difficult for them to participate in the survey. About 5 percent of the potential student sample was excluded based on these criteria. As observed by Rossi, Herting, and Wolman (1997), "[a]s a result of the exclusions discussed above, as many as one-half of the children with disabilities who are served under IDEA were likely excluded from the NELS:88/94 base-year sample. For this reason, the NELS:88/94 data should not be considered representative of children with disabilities as identified in IDEA." (Rossi et al. 1997, 2). Thus, the findings of this study probably represent students with less severe disabilities and, as such, may overestimate the rates of entry into postsecondary education for students with disabilities.

Beginning Postsecondary Students Longitudinal Study

The Beginning Postsecondary Students Longitudinal Study (BPS:90/94) is a sample of undergraduates drawn from the NPSAS:89 survey consisting of students who enrolled in postsecondary education for the first time in the 1989–90 school year. These students were subsequently surveyed in 1992 and 1994. BPS:90/94 identifies the paths that undergraduates took toward attaining a postsecondary credential. Because the last follow-up of this survey was conducted about 5 years after the cohort first enrolled in postsecondary education, it did not capture the experiences of students who left school for extended periods of time and then returned (long-term stopouts), or those who took longer than 5 years to finish a bachelor's degree.

The BPS cohort differs from the NELS cohort in a fundamental way: BPS represents *all* students beginning their undergraduate education in 1989–90, including students who delayed their postsecondary education after finishing high school for a period of years. Therefore, the BPS survey participants represent a wide age range of students with varied life experiences. In fact, some have had many years of work experience before enrolling in college. The NELS survey, on the other hand, represents all students who were in the eighth grade in 1988. Thus, the NELS participants are all approximately the same age: most were between the ages of 17 and 19 when entering college.[3]

[3]There may also be a potential coverage difference between the NELS and BPS. In the NELS survey, eighth graders who were deemed unable to complete the survey instrument were excluded (see discussion under National Education Survey Longitudinal Study above).

Baccalaureate and Beyond Longitudinal Study

The Baccalaureate and Beyond Longitudinal Study (B&B:93/94) is a sample of college seniors from NPSAS:93 who completed their bachelor's degrees in the 1992–93 school year. They were followed up one year later in 1994. This survey not only provides information about the early employment of college graduates including their occupations and starting salaries, but also supplies data on graduate school enrollment for those who continued their education soon after receiving a bachelor's degree.

Definition of Disabilities

In the NPSAS:96, BPS:90/94, and B&B:93/94 surveys, the students themselves reported their disability status and type. In the NELS:88/94 survey, disability type was identified by the parents in the Base Year when the participants were in the eighth grade. Table 1 shows the exact questions the respondents were asked in each of these surveys and their possible responses. The exact syntax of the questions varies between data sets. In this report, these varying disability types were coded into six categories:

- Visual impairment
- Hearing impairment or deaf
- Speech impairment
- Orthopedic impairment
- Learning disability
- Other impairment or disability

A small percentage of students reported having more than one disability, but these students are not specifically identified in the tables. However, if a student reported having more than one disability, such as both a visual impairment and a learning disability, he or she would be represented in both disability types in the tables. But among the entire group of students reporting any disability, they are counted only once.

Organization of This Report

This report contains four major sections. It begins with a profile of students with disabilities who were enrolled in postsecondary education in the 1995–96 school year. The profile is followed by an analysis of high school students who make the transition to postsecondary education. The third section discusses the persistence and degree attainment of students with disabilities 5 years after they began college in the 1989–90 school year. Finally, the fourth section

discusses the transition from college to the work force and graduate school for bachelor's degree recipients who graduated from college in 1992–93.

Table 1—Definition of disability types for each survey analyzed in the report

	NELS:88 parent questionnaire	BPS:90/94 student questionnaire	B&B:93/94 student questionnaire	NPSAS:96 student questionnaire
	Question as asked in the survey			
	In your opinion, does your eighth grader have any of the following problems? -AND- Has your eighth grader ever received special services for any or all of the following?	Do you have any of the following conditions?	Do you have any of the following disabilities?	Do you have any disabilities, such as a hearing, speech, or mobility impairment, or vision problems that can't be corrected with glasses?
	Disability type as categorized by the survey			
Visual impairment	Visual handicap (not correctable by glasses)	Visual handicap	Vision impairment that cannot be corrected with glasses, or are you legally blind	Legally blind or have a vision impairment that cannot be corrected with glasses
Hearing impairment or deaf	Hearing problem -OR- deafness	Hard-of-hearing -OR- deafness	Hearing impairment	A hearing impairment
Speech impairment	Speech problem	Speech disability	Speech disability or limitation	A speech disability or limitation
Orthopedic impairment	Orthopedic problem (for example: club foot, absence of arm or leg, cerebral palsy, amputation, polio)	Orthopedic handicap	Orthopedic or mobility limitation	An orthopedic or mobility limitation
Learning disability	Specific learning problem (for example: dyslexia or other reading, writing, or math disability)	Specific learning disability	Specific learning disability	A specific learning disability
Other disability or impairment	Other health problem (includes mental retardation) -OR- emotional problem -OR- other physical disability	Other health impairment	Any other type of limitations, disabilities, or handicaps	Other health-related disability or limitation

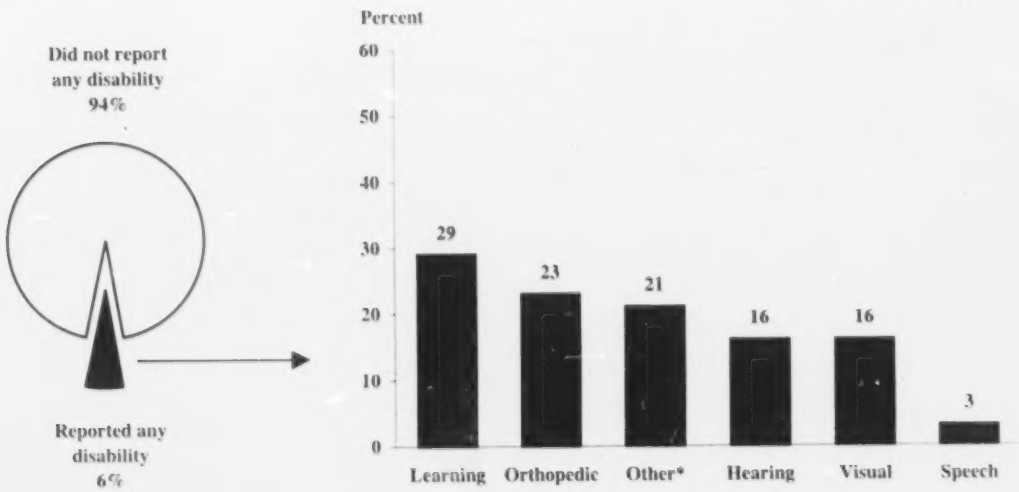
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up Survey, 1994 (NELS:88/94), Data Analysis System; 1990 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System; 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Undergraduate Data Analysis System; 1993 Baccalaureate and Beyond Longitudinal Study, First Follow-up (B&B:93/94), Data Analysis System.

Profile of Undergraduates With Disabilities

Demographics

In 1996, roughly 6 percent of all undergraduates reported having a disability (figure 1, table 2). Among 1995–96 undergraduates with a disability, approximately 29 percent reported having a learning disability, and 23 percent reported an orthopedic impairment. About 16 percent of students with disabilities reported having a hearing impairment, 16 percent a vision impairment, and 3 percent a speech impairment. In addition, one in five undergraduates with disabilities (21 percent) reported having another "health-related" disability or limitation.

Figure 1—Percentage of 1995–96 undergraduates who reported a disability, and among those with disabilities, the percentage reporting each disability type



*Any other health-related disability or impairment.

NOTE: Percentages do not sum to 100 because some students reported multiple disabilities.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Undergraduate Data Analysis System.

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Table 2—Percentage of 1995–96 undergraduates who reported a disability, and among those with disabilities, the percentage reporting each disability type, by selected student characteristics

		Has a disability					
	Total with a disability	Visual impairment	Hearing impairment or deaf	Speech impairment	Orthopedic impairment	Learning disability	Other disability or impairment*
Total	5.5	16.3	16.3	3.0	22.9	29.2	21.2
Gender							
Male	6.3	14.7	19.8	4.2	23.0	27.1	19.9
Female	4.9	18.0	12.8	1.8	22.7	31.4	22.5
Race–ethnicity							
White, non-Hispanic	6.2	15.8	17.1	1.8	22.6	31.3	20.6
Black, non-Hispanic	3.4	11.7	11.3	1.7	31.3	18.0	34.2
Hispanic	4.1	19.1	17.5	16.3	17.3	23.7	14.6
Asian/Pacific Islander	1.9	—	—	—	—	—	—
American Indian/Alaskan Native	13.4	—	—	—	—	—	—
Income quartile							
Low quartile	6.7	11.9	11.2	4.6	30.7	28.5	25.4
Middle quartiles	5.4	19.6	19.9	2.1	23.7	23.0	20.3
High quartile	4.7	14.5	14.3	2.9	12.1	43.6	18.1

—Sample size too small for a reliable estimate.

*Student reported having other health-related disabilities or limitations.

NOTE: Percentages will not sum to 100 because some students reported multiple disabilities.

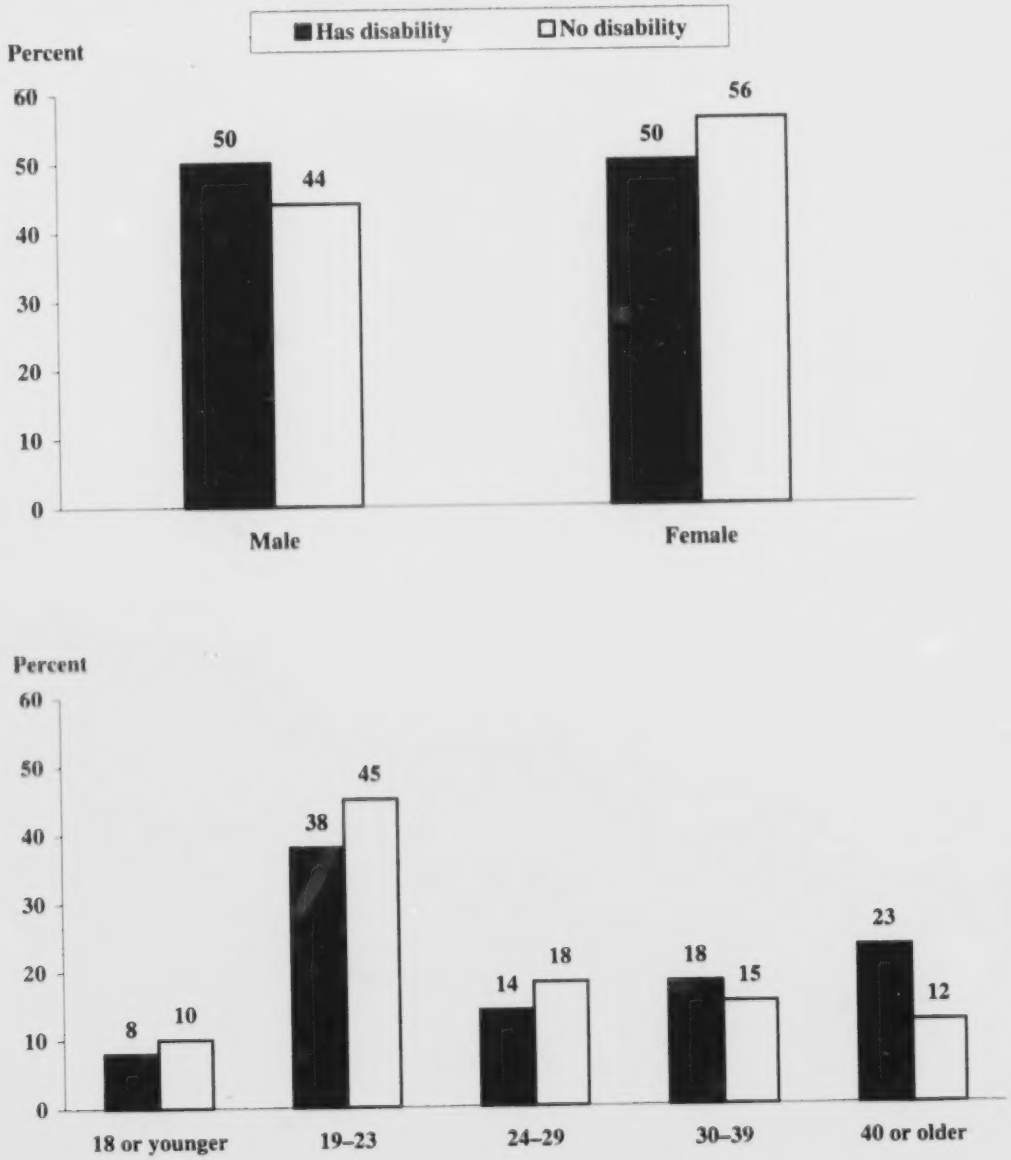
SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Undergraduate Data Analysis System.

As shown in figure 2 and table 3, compared to undergraduates who reported no disabilities, those with disabilities were more likely to be male (50 versus 44 percent), and more likely to be white, non-Hispanic (81 versus 71 percent; table 4). About 8 percent of students with disabilities were Hispanic; 7 percent were black, non-Hispanic; 2 percent were Asian/Pacific Islander; and 2 percent were of American Indian/Alaskan Native descent.[4]

It appears as though there were modest differences between students with and without disabilities relative to income level when undergraduates were grouped into approximate income quartiles (i.e., bottom 25 percent, middle 50 percent, and top 25 percent income levels). For example, 27 percent of students with disabilities were in the low income quartile compared with 22

[4]In table 4 it appears that a much higher proportion of students with speech impairments are Hispanic. However, due to the small sample of Hispanic students with disabilities, there is not enough statistical evidence to conclude that this is the case. Readers should use caution in interpreting all estimates of disability type by race unless a difference by race is mentioned in the text.

Figure 2—Percentage distribution of 1995–96 undergraduates according to gender and age, by disability status



NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Undergraduate Data Analysis System.

Table 3—Percentage distribution of 1995–96 undergraduates according to gender, by disability status and type

	Male	Female
Total	44.1	55.9
Does not have a disability	43.7	56.3
Has a disability	50.0	50.0
Visual impairment	45.1	55.0
Hearing impairment or deaf	60.6	39.4
Speech impairment	69.7	30.3
Orthopedic impairment	50.3	49.7
Learning disability	46.3	53.7
Other disability or impairment*	46.9	53.1

*Student reported having other health-related disabilities or limitations.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Undergraduate Data Analysis System.

Table 4—Percentage distribution of 1995–96 undergraduates according to race–ethnicity, by disability status and type

	White, non-Hispanic	Black, non-Hispanic	Hispanic	Asian/ Pacific Islander	American Indian/ Alaskan Native	Other
Total	71.4	11.6	10.3	5.3	0.9	0.5
Does not have a disability	71.0	11.8	10.5	5.4	0.8	0.5
Has a disability	80.9	7.1	7.7	1.8	2.1	0.4
Visual impairment	78.1	5.1	9.0	5.8	1.1	0.9
Hearing impairment or deaf	85.0	4.9	8.3	0.8	0.9	0.2
Speech impairment	50.1	4.1	42.2	0.0	1.2	2.4
Orthopedic impairment	79.8	9.7	5.8	1.2	3.0	0.5
Learning disability	86.5	4.4	6.2	1.1	1.1	0.6
Other disability or impairment*	78.6	11.4	5.3	0.5	4.1	0.1

*Student reported having other health-related disabilities or limitations.

NOTE: Percentages may not sum to 100 due to rounding. Values of 0.0 are estimates less than 0.05 percent.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Undergraduate Data Analysis System.

percent of students without disabilities (table 5). There was not enough statistical evidence, however, to conclude that the percentages in the low income (or high income) quartiles differed.

Students with disabilities were, on average, older than their counterparts without disabilities (age 30 versus age 26; table 6). Nearly one-quarter of students with disabilities (23 percent)

Table 5—Percentage distribution of 1995–96 undergraduates according to income quartile, by disability status and type

	Low income quartile	Middle income quartiles	High income quartile
Total	22.2	50.5	27.4
Does not have a disability	21.9	50.7	27.5
Has a disability	26.8	50.0	23.2
Visual impairment	19.5	59.9	20.6
Hearing impairment or deaf	18.5	61.1	20.5
Speech impairment	41.7	36.0	22.3
Orthopedic impairment	36.0	51.7	12.2
Learning disability	26.1	39.2	34.7
Other disability or impairment*	32.2	47.9	19.9

*Student reported having other health-related disabilities or limitations.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Undergraduate Data Analysis System.

Table 6—Percentage distribution of 1995–96 undergraduates according to age, and the average age, by disability status and type

	18 or younger	19–23	24–29	30–39	40 or older	Average age
Total	10.2	44.7	17.9	15.0	12.2	27
Does not have a disability	10.3	45.0	18.3	14.8	11.6	26
Has a disability	8.2	37.8	13.6	17.7	22.7	30
Visual impairment	9.4	35.5	12.0	20.8	22.3	29
Hearing impairment or deaf	5.8	37.2	16.4	16.0	24.7	31
Speech impairment	11.5	47.9	20.6	7.6	12.4	25
Orthopedic impairment	2.2	15.9	12.4	25.6	43.9	37
Learning disability	11.5	55.4	13.3	12.0	7.9	25
Other disability or impairment*	8.5	34.5	14.7	16.7	25.6	30

*Student reported having other health-related disabilities or limitations.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Undergraduate Data Analysis System.

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were 40 or older, compared with 12 percent of students without disabilities. Among specific disability types, students with orthopedic impairments were older than students with any other disability type (average age 37 versus age 25 to 31).

Finally, also consistent with their older age, undergraduates with disabilities were more likely than students without disabilities to have dependents (30 versus 24 percent; table 7). However, there was not enough statistical evidence to conclude that those with disabilities were more likely to be married (27 and 25 percent, respectively).

Table 7—Percentage of 1995–96 undergraduates who are married, and the percentage who have dependents, by disability status and type

	Married	Has dependents
Total	24.6	24.2
Does not have a disability	24.6	23.8
Has a disability	27.1	29.8
Visual impairment	20.5	22.6
Hearing impairment or deaf	39.6	32.2
Speech impairment	25.7	35.2
Orthopedic impairment	45.2	39.0
Learning disability	15.0	21.2
Other disability or impairment*	21.4	37.3

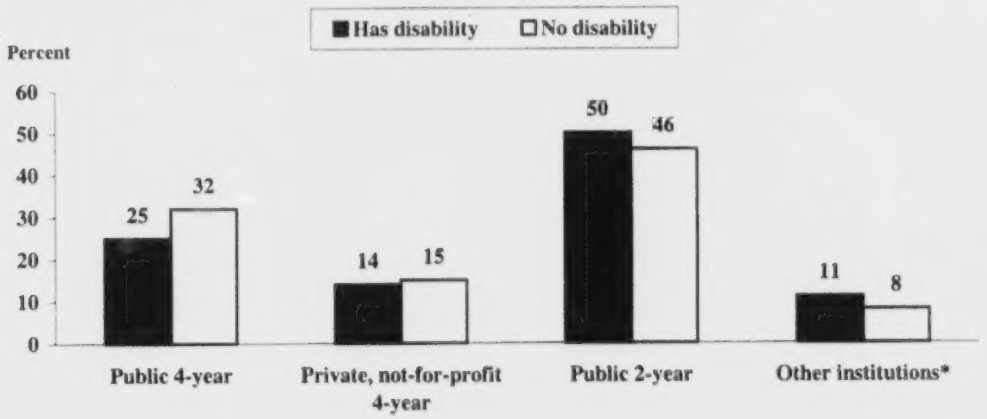
*Student reported having other health-related disabilities or limitations.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Undergraduate Data Analysis System.

Enrollment Characteristics

Students with and without disabilities differed somewhat with respect to the type of institution they attended in 1995–96. Those with disabilities were less likely to be enrolled in public 4-year colleges and universities (25 versus 32 percent), and more likely to attend either public 2-year institutions or "other" institutions, which include for-profit vocational institutions (figure 3, table 8). Like students without disabilities, roughly half of those with a disability were enrolled in school full time (table 9).

Figure 3—Percentage distribution of 1995–96 undergraduates according to postsecondary institution, by disability status



*Students enrolled in private, for-profit institutions; public less-than-2-year institutions; or private, not-for-profit less-than-4-year institutions were considered to be enrolled in other institutions.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Undergraduate Data Analysis System.

Table 8—Percentage distribution of 1995–96 undergraduates according to institution type, by disability status and type

	4-year institutions			Other institutions		
	Total	Public	Private, not-for-profit	Total	Public 2-year	Other[1]
Total	46.1	31.4	14.7	53.9	45.8	8.1
Does not have a disability	46.7	31.9	14.8	53.3	45.5	7.9
Has a disability	39.6	25.3	14.3	60.4	49.5	10.9
Visual impairment	38.5	23.7	14.8	61.5	50.0	11.5
Hearing impairment or deaf	38.0	28.6	9.4	62.0	50.8	11.2
Speech impairment	61.6	42.4	19.2	38.4	35.6	2.7
Orthopedic impairment	33.6	22.8	10.7	66.4	50.1	16.4
Learning disability	40.6	21.5	19.1	59.4	51.2	8.2
Other disability or impairment[2]	37.8	25.1	12.7	62.2	51.5	10.7

[1]Students enrolled in private, for-profit institutions; public less-than-2-year institutions; or private, not-for-profit, less-than-4-year institutions.
[2]Student reported having other health-related disabilities or limitations.

NOTE: Percentages may not sum to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Undergraduate Data Analysis System.

Table 9—Percentage distribution of 1995–96 undergraduates according to enrollment intensity, by disability status and type

	Full-time, full-year	Full-time, part-year	Part-time, full-year	Part-time, part-year
Total	40.5	12.7	24.6	22.2
Does not have a disability	40.8	12.4	24.6	22.3
Has a disability	38.7	15.6	24.5	21.2
Visual impairment	41.3	9.6	29.0	20.1
Hearing impairment or deaf	34.9	14.3	33.7	17.2
Speech impairment	32.0	6.9	25.4	35.6
Orthopedic impairment	29.8	23.4	18.8	28.0
Learning disability	45.1	13.8	24.1	17.1
Other disability or impairment*	40.3	13.8	25.1	20.8

*Student reported having other health-related disabilities or limitations.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Undergraduate Data Analysis System.

There were no statistically significant differences between students with and without disabilities in their undergraduate fields of study. Roughly one-fifth (17 and 20 percent, respectively) were in business-related fields; 18 and 15 percent were in humanities; and 11 and 13 percent were in health fields (table 10).

Undergraduates who were in their first or second year of college reported on whether or not they had taken any remedial courses. Among these students, those with and without disabilities differed in whether or not they reported taking such courses in the 1995–96 school year.[5] Nearly one-fifth (18 percent) of students with disabilities reported taking remedial courses, compared with 12 percent of students without disabilities (table 11).

Looking at specific disability types, it appears as though students with learning disabilities or visual impairments were more likely than other students with disabilities to report having taken a remedial course (24 and 23 versus 14 to 17 percent). However, due to small sample sizes, there was not enough statistical evidence to conclude that they differed.

[5]Student-reported remedial education status reported by NPSAS undergraduates differs markedly from the proportion of students taking remedial courses reported by institutions. In a survey of remedial education in higher education, institutions reported that 29 percent of first-time freshmen had enrolled in at least one remedial reading, writing, or mathematics course in fall 1995. U.S. Department of Education, National Center for Education Statistics, *Remedial Education at Higher Education Institutions in Fall 1995* (NCES 97–584) (Washington, D.C.: 1996).

Table 10—Percentage distribution of 1995–96 undergraduates according to major field of study, by disability status and type

	Humanities	Social/ behavioral sciences	Life sciences	Physical sciences	Math	Computer/ information science	Engineering	Education	Business/ management	Health	Vocational/ technical	Other technical/ professional
Total	14.6	9.5	5.7	1.0	0.6	3.4	8.1[1]	8.5	19.7	12.7	2.7	13.5
Does not have a disability	14.5	9.7	5.7	1.0	0.6	3.3	8.2	8.7	19.8	12.8	2.6	13.3
Has a disability	17.6	9.4	3.4	0.6	0.2	3.9	9.7	8.3	17.4	11.4	3.8	14.2
Visual impairment	10.9	9.9	4.2	2.3	0.0	6.0	4.1	15.6	20.4	10.7	4.3	11.7
Hearing impairment or deaf	11.0	5.3	2.5	0.4	0.7	3.6	16.9	6.2	24.0	13.7	3.6	12.2
Speech impairment	45.2	0.0	0.0	0.0	0.0	5.9	6.2	11.4	9.3	14.0	1.1	6.9
Orthopedic impairment	15.1	10.4	4.6	0.3	0.7	5.8	10.8	5.9	16.6	9.0	3.6	17.3
Learning disability	21.1	11.1	3.0	0.4	0.0	2.6	9.8	6.9	13.4	9.3	4.3	18.1
Other disability or impairment[2]	21.6	12.7	2.1	0.3	0.1	3.3	9.3	8.0	14.7	14.3	2.4	11.2

[1]Total percentage not in range of those with or without disabilities because of missing cases on the disability variable.

[2]Student reported having other health-related disabilities or limitations.

NOTE: Percentages may not sum to 100 due to rounding. Values of 0.0 are estimates less than 0.05 percent.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Undergraduate Data Analysis System.

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Table 11—Percentage of 1995–96 first- and second-year undergraduates who reported taking remedial courses in college in 1995–96,[1] by disability status and type and institution type

	Took remedial courses
Total	12.4
Does not have a disability	12.0
Has a disability	18.4
Visual impairment	22.8
Hearing impairment or deaf	14.0
Speech impairment	—
Orthopedic impairment	15.4
Learning disability	23.5
Other disability or impairment[2]	17.3
Public 4-year	
Does not have a disability	10.9
Has a disability	19.4
Private, not-for-profit 4-year	
Does not have a disability	8.1
Has a disability	12.1
Public 2-year	
Does not have a disability	14.0
Has a disability	21.1
Other institutions[3]	
Does not have a disability	5.9
Has a disability	9.3

—Sample size too small for a reliable estimate.

[1]Student-reported remedial education status reported by NPSAS undergraduates differs markedly from the proportion of students taking remedial courses reported by institutions. In a survey of remedial education in higher education, institutions reported that 29 percent of first-time freshmen had enrolled in at least one remedial reading, writing, or mathematics course in fall 1995. U.S. Department of Education, National Center for Education Statistics, *Remedial Education at Higher Education Institutions in Fall 1995* (NCES 97–584) (Washington, D.C.: 1996).

[2]Student reported having other health-related disabilities or limitations.

[3]Students enrolled in private, for-profit institutions; public less-than-2-year institutions; or private, not-for-profit less-than-4-year institutions.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Undergraduate Data Analysis System.

Student Services and Activities

The extent to which students with disabilities used special services designed specifically for them cannot be determined from the NPSAS survey.[6] However, students did report on whether or not they used any counseling services (including academic counseling); whether they participated in student athletics, or cultural/recreational activities; and whether they used job placement services.

[6]A forthcoming NCES report contains information about the extent of special services offered by 2-year and 4-year colleges based on a special Postsecondary Education Quick Information System (PEQIS) survey of postsecondary institutions carried out in the spring of 1998: U.S. Department of Education, National Center for Education Statistics, *Institutional Profile of Postsecondary Students With Disabilities* (NCES 1999–046) by Laurie Lewis and Elizabeth Farris. Project Officer, Bernie Greene (Washington, DC: 1999).

Undergraduates with disabilities reported using counseling services somewhat more often than their counterparts without disabilities (27 versus 22 percent; table 12). Use of counseling services was especially evident for students with learning disabilities. For example, they were more likely to report using such services (37 percent) than students who reported "other" disabilities (20 percent).[7]

Table 12—Percentage of 1995–96 undergraduates participating in counseling services and other school activities, by disability status and type

	Used counseling services	Participated in cultural/recreation activities	Participated in athletic activities	Used job placement services
Total	21.5[1]	12.9	19.6	7.5[1]
Does not have a disability	21.8	13.4	20.4	7.7
Has a disability	27.4	12.8	17.6	8.1
Visual impairment	20.7	11.0	15.4	7.3
Hearing impairment or deaf	22.0	10.3	19.1	4.9
Speech impairment	36.7	16.0	23.0	2.5
Orthopedic impairment	30.8	14.4	8.1	9.9
Learning disability	37.4	17.1	25.3	9.4
Other disability or impairment[2]	20.3	11.9	14.6	7.7

[1]Total percentage not in range of those with or without disabilities because of missing cases for the disability variable.
[2]Student reported having other health-related disabilities or limitations.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Undergraduate Data Analysis System.

Students with disabilities were equally likely to participate in cultural or recreational activities as their counterparts without disabilities (13 percent). The same pattern held for participation in athletic activities. About 18 percent of students with disabilities and 20 percent without disabilities reported participating in athletic activities. The lack of difference in athletic participation remained among students with specific disability types when comparing participation for students with each type of disability to that for students without disabilities. Only students with orthopedic impairments were less likely to have reported participating in athletic programs. Finally, while a relatively small percentage of students reported using job placement services, students with and without disabilities were equally likely to have done so (8 percent).

[7]While it appears that students with speech impairments were also more likely to use counseling services, there is not enough statistical evidence to make this conclusion.

Employment While Enrolled

A majority of undergraduates work while they are enrolled to help pay for their education and living expenses (Horn 1998). In this study, this was true both for students with and without disabilities, but students with disabilities were less likely to work: about one-third (35 percent) did not work while enrolled, compared with one-fifth of students without disabilities (table 13). The likelihood of working part time while enrolled did not differ greatly between the two groups. Students without disabilities were somewhat more likely to work 16–20 hours per week (13 versus 8 percent) but similar proportions worked 1–15 hours per week and 16–34 hours per week. However, a higher proportion of students without disabilities worked full time (35 or more hours; 37 versus 27 percent).

Table 13—Percentage distribution of 1995–96 undergraduates according to hours worked per week while enrolled, by disability status and type

		If worked: hours worked per week while enrolled			
	Did not work	1–15 hours	16–20 hours	21–34 hours	35 or more hours
Total	21.2	13.2	12.4	16.7	36.4
Does not have a disability	20.3	13.3	12.7	16.7	36.9
Has a disability	35.2	11.5	8.2	17.8	27.3
Visual impairment	24.7	12.0	5.3	16.6	41.4
Hearing impairment or deaf	30.1	7.9	10.9	20.9	30.3
Speech impairment	22.0	10.7	14.6	40.1	12.7
Orthopedic impairment	53.4	8.8	3.6	9.4	24.8
Learning disability	26.9	15.0	16.0	22.5	19.5
Other disability or impairment*	49.0	11.2	3.0	13.6	23.2

*Student reported having other health-related disabilities or limitations.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Undergraduate Data Analysis System.

Although they were less likely to work for pay, undergraduates with disabilities were more likely than their counterparts with no disabilities to report volunteering their time. About 39 percent of undergraduates with a disability reported volunteering at least one hour per week, compared with 32 percent of those without disabilities (table 14).

Table 14—Percentage of 1995–96 undergraduates participating in volunteer services, and hours per week, by disability status and type

	Total percent volunteered	Hours volunteered per week		
		1–5 hours	6–10 hours	More than 10 hours
Total	32.7	22.3	4.1	6.3
Does not have a disability	32.3	22.2	3.9	6.2
Has a disability	39.2	25.0	6.6	7.7
Visual impairment	38.0	26.6	3.7	7.8
Hearing impairment or deaf	38.4	25.4	6.3	6.7
Speech impairment	25.7	16.6	2.7	6.4
Orthopedic impairment	38.3	26.1	7.8	4.4
Learning disability	46.4	24.5	8.1	13.8
Other disability or impairment*	43.3	27.7	9.6	6.0

*Student reported having other health-related disabilities or limitations.

NOTE: Percentages may not sum to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Undergraduate Data Analysis System.

Dependency Status and Financial Aid

In 1995–96, about one-half of all undergraduates received financial aid to help pay their education expenses. This was true for both dependent and independent students (tables 16 and 18).[8] The need for financial aid is determined by a student's ability to pay relative to the amount it costs a typical student to attend a particular institution (student budget). The need for financial aid increases as the student budget increases. Student aid is usually awarded in "packages" of grants, loans, and work-study awards. The biggest source of financial aid is the federal government, but states and institutions also award aid. If students with and without disabilities differ in terms of their likelihood of receiving financial aid (or the amounts received), it generally means that the two groups differed either in their ability to pay (e.g., their incomes differed) or the price of the institutions they attended differed. For students who are financially dependent on their parents, ability to pay is based on family income, and for independent students, it is based on student income. It should also be noted that some students with disabilities receive alternative forms of financial assistance such as Supplemental Security Income (SSI) and Social Security Disability Insurance (SSDI).

Because students with disabilities were, on average, older than their counterparts without disabilities, they were less likely to be financially dependent on their parents. About 41 percent of undergraduates with disabilities were dependent, compared with about one-half of undergraduates without disabilities (table 15). Students with disabilities were also more likely than those without disabilities to have dependents (30 versus about 24 percent).

[8]See glossary in appendix C for a definition of "dependence." Most students under the age of 24 who have been claimed as dependents on their parents' income tax forms are considered dependent for federal financial aid purposes.

Table 15—Percentage distribution of 1995–96 undergraduates according to dependency status, by disability status and type

	Dependent	Independent, no dependents	Independent, with dependents
Total	49.3	26.5	24.2
Does not have a disability	49.6	26.7	23.8
Has a disability	40.7	29.6	29.8
Visual impairment	41.8	35.6	22.6
Hearing impairment or deaf	33.9	33.9	32.2
Speech impairment	59.0	5.9	35.2
Orthopedic impairment	15.9	45.2	39.0
Learning disability	61.5	17.3	21.2
Other disability or impairment*	36.6	26.2	37.3

*Student reported having other health-related disabilities or limitations.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Undergraduate Data Analysis System.

Among students with disabilities, those with orthopedic impairments (who were generally older than other students with disabilities) were less likely to be financially dependent than almost all other students with disabilities (16 versus 37 to 62 percent).[9] Students with learning disabilities, in contrast, were more likely to be dependent than students with hearing impairments or those reporting "other" disabilities (62 versus 34 and 37 percent, respectively). While it appears as though students with learning disabilities also were more likely to be dependent than those with visual impairments (62 versus 42 percent), there was not enough statistical evidence to draw this conclusion.

Dependent Undergraduates

Among dependent undergraduates, the proportions of students with and without disabilities who received any financial aid did not differ significantly. Roughly one-half of both groups received aid (48 percent and 53 percent, respectively; table 16). However, when looking at specific types of aid, dependent students with disabilities were less likely to receive either grants (35 versus 41 percent), or loans (26 versus 32 percent). Conversely, it appears as though undergraduates with disabilities were more likely than those without disabilities to have received "other" types of financial aid (which include loans to parents and veterans benefits): 11 percent and 8 percent, respectively. However, there was not enough statistical evidence to conclude that the proportions

[9]The one exception was students with hearing impairments, where the proportion of dependents in that category was not significantly different from the proportion among those with orthopedic impairments.

Table 16—Percentage of 1995–96 dependent undergraduates receiving various types of financial aid, by disability status and type and institution type

	Received financial aid	Received federal aid	Received grants[1]	Received loans[1]	Received employer aid	Received work-study	Received other aid[2]
Total	52.4	39.3	40.3	31.1	2.8	8.5	8.0
Does not have a disability	53.2	40.0	41.1	31.7	2.9	8.8	7.9
Has a disability	47.7	33.8	34.9	25.7	2.0	6.1	11.1
Visual impairment	61.0	41.7	51.2	29.1	1.3	8.5	4.8
Hearing impairment or deaf	47.1	31.2	35.9	23.2	0.7	5.5	8.2
Speech impairment	43.6	43.2	42.8	22.1	0.0	12.7	2.6
Orthopedic impairment	62.3	42.3	37.7	25.9	0.7	9.2	22.6
Learning disability	46.9	34.5	32.1	25.8	3.4	5.9	13.7
Other disability or impairment[3]	33.9	22.4	22.5	24.8	1.2	4.4	10.8
Public 4-year							
Does not have a disability	59.2	44.7	41.9	37.7	2.0	7.9	8.8
Has a disability	48.2	33.6	30.5	28.8	1.2	3.6	10.1
Private, not-for-profit 4-year							
Does not have a disability	77.4	59.5	69.4	53.6	4.8	25.8	13.9
Has a disability	69.3	51.9	60.8	44.4	5.6	20.0	15.4
Public 2-year							
Does not have a disability	31.3	21.2	24.4	10.7	3.3	1.6	2.5
Has a disability	33.1	21.1	23.2	10.5	0.6	1.2	7.8
Other institutions[4]							
Does not have a disability	70.2	63.4	46.4	51.7	1.3	1.9	17.8
Has a disability	67.0	57.0	42.8	46.4	2.1	1.8	23.5

[1]From all sources, federal and nonfederal.

[2]Other types of financial aid include teaching and research assistantships, parent loans (PLUS), veteran's benefits and military tuition aid, and vocational rehabilitation and job training (JTPA).

[3]Student reported having other health-related disabilities or limitations.

[4]Students enrolled in private, for-profit institutions; public less-than-2-year institutions; or private, not-for-profit less-than-4-year institutions.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Undergraduate Data Analysis System.

receiving "other" aid were different. Among those who received aid, dependent students with disabilities received relatively similar amounts as those without disabilities ($5,600 and $6,000, respectively; table 17).

Among dependent students enrolled in specific types of institutions, there were differences in financial aid receipt among those in public 4-year institutions. Students with disabilities were less likely than those without disabilities to receive any financial aid (48 versus 59 percent; table 16). This also held true for grant aid (31 versus 42 percent), loan aid (29 versus 38 percent), and work-study (4 versus 8 percent).

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Table 17—Average amount of financial aid received by 1995–96 dependent undergraduates who received aid, by disability status and type and institution type

	Total financial aid	Amount federal aid	Amount grants[1]	Amount loans[1]	Amount employer aid	Amount work-study	Amount other aid[2]
Total	$6,002	$4,657	$3,645	$3,693	$2,572	$1,392[3]	$5,080
Does not have a disability	6,015	4,653	3,651	3,694	2,546	1,391	5,151
Has a disability	5,645	4,864	3,361	3,544	3,631	1,371	4,726
Visual impairment	5,404	4,232	3,606	3,752	—	—	—
Hearing impairment or deaf	5,433	3,613	3,620	3,484	—	—	—
Speech impairment	—	—	—	—	—	—	—
Orthopedic impairment	5,019	3,964	3,757	—	—	—	—
Learning disability	6,076	5,272	3,291	3,821	—	—	5,200
Other disability or impairment[3]	5,836	5,781	3,121	2,604	—	—	—
Public 4-year							
Does not have a disability	5,188	4,650	2,827	3,652	2,210	1,471	4,521
Has a disability	4,875	4,921	2,623	3,683	—	—	4,435
Private, not-for-profit 4-year							
Does not have a disability	10,539	6,167	6,477	4,243	5,059	1,366	7,428
Has a disability	9,140	6,219	5,149	4,129	—	1,460	7,014
Public 2-year							
Does not have a disability	2,183	2,415	1,401	2,583	827	1,173	1,882
Has a disability	2,474	2,779	1,817	—	—	—	—
Other institutions[4]							
Does not have a disability	4,918	4,620	1,983	3,412	2,451	1,271	4,191
Has a disability	5,909	5,490	2,387	3,652	—	—	—

—Sample size too small for a reliable estimate.

[1]From all sources, federal and nonfederal.

[2]Other types of financial aid include teaching and research assistantships, parent loans (PLUS), veterans' benefits and military tuition aid, and vocational rehabilitation and job training (JTPA).

[3]Total not within the range of those with or without disabilities because of missing cases for disability variable.

[4]Student reported having other health-related disabilities or limitations.

[5]Students enrolled in private, for-profit institutions; public less-than-2-year institutions; or private, not-for-profit less-than-4-year institutions.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Undergraduate Data Analysis System.

For dependent students in private, not-for-profit 4-year institutions, those with disabilities were no less likely (statistically) than those without disabilities to receive any financial aid (69 percent and 77 percent, respectively). However, among those who received aid in these institutions, students with disabilities received less grant aid than those without disabilities ($5,100 versus $6,500; table 17).

Independent Undergraduates

Although independent undergraduates with disabilities were about as likely to receive financial aid as students without disabilities (58 percent and 53 percent, respectively), they were

more likely to receive federal aid (40 versus 32 percent; table 18). Independent undergraduates with disabilities were also more likely than those without disabilities to receive "other" types of financial aid (18 versus 7 percent).

Table 18—Percentage of 1995–96 independent undergraduates receiving various types of financial aid, by disability status and type and institution type

	Received financial aid	Received federal aid	Received grants[1]	Received loans[1]	Received employer aid	Received work-study	Received other aid[2]
Total	53.3	32.8	43.7	21.2	14.7	2.4	7.5
Does not have a disability	53.2	32.4	44.1	21.2	15.5	2.4	6.7
Has a disability	57.5	39.7	42.2	24.8	6.9	1.9	17.5
Visual impairment	43.0	28.0	32.6	16.8	9.5	0.5	9.3
Hearing impairment or deaf	61.4	36.1	43.8	27.8	13.0	1.7	14.8
Speech impairment	—	—	—	—	—	—	—
Orthopedic impairment	66.8	43.8	44.1	25.0	5.1	2.5	28.0
Learning disability	54.6	48.2	49.6	31.9	4.0	3.5	5.1
Other disability or impairment[3]	57.7	43.8	43.7	24.5	2.9	2.3	20.6
Public 4-year							
Does not have a disability	59.3	44.1	46.0	36.4	11.4	4.0	8.6
Has a disability	68.8	53.0	54.1	44.1	11.3	2.6	18.5
Private, not-for-profit 4-year							
Does not have a disability	72.1	38.6	62.4	33.0	30.7	5.8	8.1
Has a disability	78.4	51.4	56.9	45.0	16.4	6.9	25.3
Public 2-year							
Does not have a disability	43.1	20.9	37.4	8.0	16.2	1.5	5.1
Has a disability	45.6	28.9	32.8	10.1	3.6	1.3	14.2
Other institutions[4]							
Does not have a disability	72.9	59.2	56.4	43.5	6.1	0.2	9.4
Has a disability	73.0	53.6	50.9	39.1	6.6	0.1	24.0

—Sample size too small for a reliable estimate.

[1]From all sources, federal and nonfederal.

[2]Other types of financial aid include teaching and research assistantships, parent loans (PLUS), veterans' benefits and military tuition aid, and vocational rehabilitation and job training (JTPA).

[3]Student reported having other health-related disabilities or limitations.

[4]Students enrolled in private, for-profit institutions; public less-than-2-year institutions; or private, not-for-profit less-than-4-year institutions.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Undergraduate Data Analysis System.

Among independent students enrolled in specific types of institutions, students with disabilities in public 4-year institutions appeared to be more likely to have received aid than their financially independent counterparts without disabilities (69 versus 59 percent), but there was not enough statistical evidence to conclude that they were different. Looking at specific types of aid, however, independent students with disabilities in public 4-year colleges were more likely than their counterparts without disabilities to receive "other" types of aid (19 versus 9 percent).

In private, not-for-profit 4-year institutions, independent students with disabilities also were more likely to receive "other" types of financial aid (25 versus 8 percent) than those without disabilities. They were less likely, however, to receive aid from employers (16 versus 31 percent).

Table 19—Average amount of financial aid received by 1995–96 independent undergraduates who received aid, by disability status and type and institution type

	Total financial aid	Amount federal aid	Amount grants[1]	Amount loans[1]	Amount employer aid	Amount work-study	Amount other aid[2]
Total	$3,713	$4,219	$1,834	$4,552	$1,074	$1,542	$2,337
Does not have a disability	3,686	4,247	1,827	4,549	1,057	1,507	2,313
Has a disability	4,420	4,209	1,997	4,606	1,880	1,938	2,971
Visual impairment	3,657	4,188	1,766	4,870	—	—	—
Hearing impairment or deaf	4,013	3,952	1,508	3,740	—	—	4,704
Speech impairment	—	—	—	—	—	—	—
Orthopedic impairment	4,621	4,134	2,148	4,825	—	—	3,125
Learning disability	5,069	4,739	2,073	4,645	—	—	—
Other disability or impairment[3]	4,563	3,909	2,262	4,596	—	—	2,397
Public 4-year							
Does not have a disability	5,070	5,381	2,020	4,937	814	1,616	2,490
Has a disability	6,053	5,881	2,349	5,058	—	—	3,171
Private, not-for-profit 4-year							
Does not have a disability	5,911	6,056	3,414	5,541	2,410	1,314	2,795
Has a disability	6,762	6,088	2,955	5,731	—	—	3,829
Public 2-year							
Does not have a disability	1,830	2,539	1,130	3,111	520	1,526	1,834
Has a disability	2,581	2,535	1,507	—	—	—	2,327
Other institutions[4]							
Does not have a disability	4,672	4,343	2,112	4,459	2,585	—	2,869
Has a disability	4,906	4,012	1,965	4,380	—	—	3,632

—Sample size too small for a reliable estimate.

[1]From all sources, federal and nonfederal.

[2]Other types of financial aid include teaching and research assistantships, parent loans (PLUS), veterans' benefits and military tuition aid, and vocational rehabilitation and job training (JTPA).

[3]Student reporting any other health-related disabilities or limitations.

[4]Students enrolled in private, for-profit institutions; public less-than-2-year institutions; or private, not-for-profit less-than-4-year institutions.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Undergraduate Data Analysis System.

Finally, as shown in table 19, unlike dependent students, among students who received aid, independent students with disabilities received more financial aid, on average, than their independent counterparts without disabilities ($4,400 versus $3,700). This was especially evident among those who received employer aid, among whom students with disabilities received an average of $1,900, compared with roughly $1,100 received by students without disabilities.

Access to Postsecondary Education

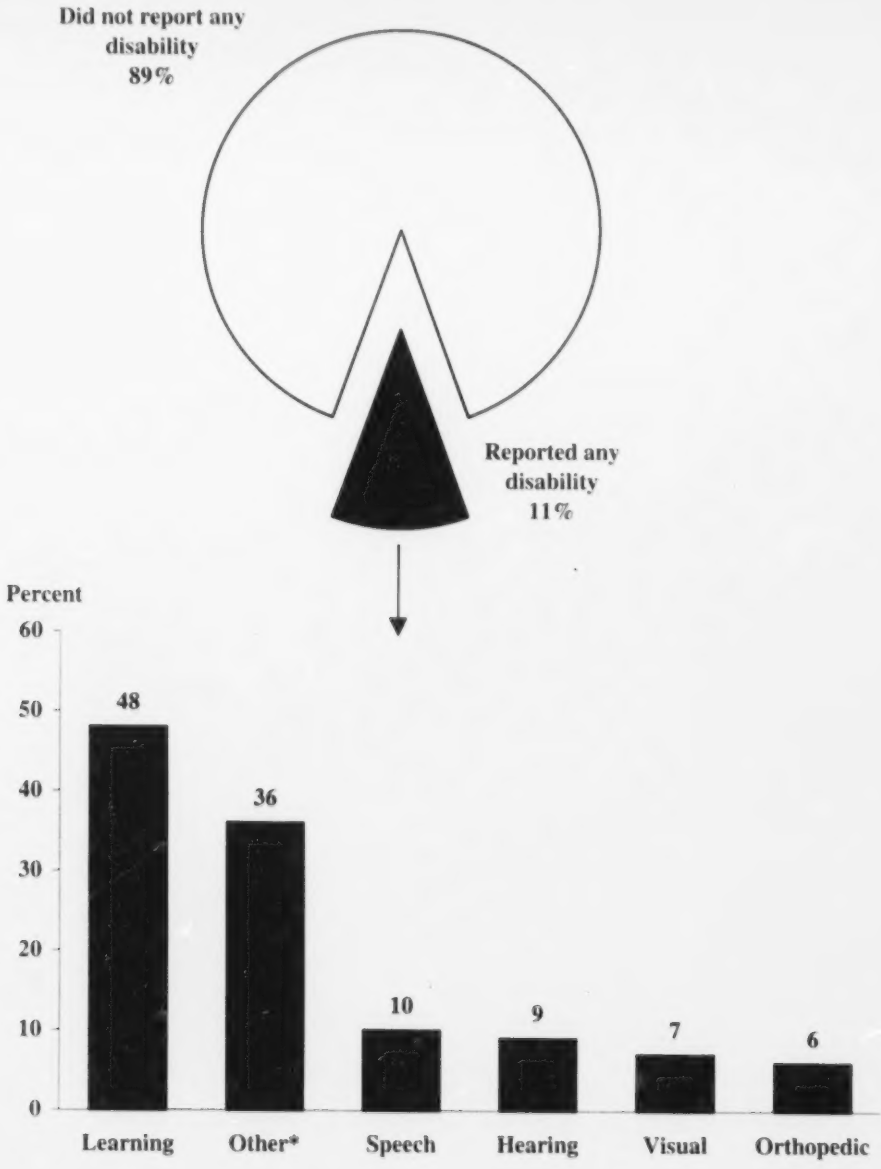
High School Completion Status

Among 1988 eighth graders, about 11 percent had a disability as reported by their parents (figure 4). Among those with disabilities, most were either students with learning disabilities (48 percent) or had "other" disabilities (36 percent), a combined group that includes students with health problems, emotional problems, mental retardation, and other physical disabilities and had received appropriate services for it (see appendix table B1 for demographic characteristics).[10]

Before an analysis describing access to postsecondary education can be considered, it is important to determine who is eligible to enroll. Most collegiate institutions require students to complete high school before enrolling. If students do not, they are eligible to attend institutions that have open admission policies (such as community colleges or for-profit vocational institutions). Among 1988 eighth graders, students with disabilities were less likely than students without disabilities to have earned a standard high school diploma by 1994 (72 versus 84 percent) (table 20). At the same time, they were no more likely than students without disabilities to have completed high school by alternative means (such as earning a GED or high school equivalent certificate) by 1994 (7 percent and 6 percent, respectively). However, those with disabilities were more likely to be enrolled and still working toward high school completion in 1994, whether in the form of a high school diploma or a GED (about 11 versus 4 percent of those without disabilities). These findings indicate that roughly 1 in 10 of 1988 eighth graders with disabilities may have completed high school later than 1994. If these students planned to enroll in postsecondary education, they would have done so after the date of the last survey. Therefore, it would be inappropriate to include them in an analysis of postsecondary access in 1994. Likewise, students who did not complete high school and who were not enrolled (10 percent of students with disabilities and 6 percent of students without disabilities) were also excluded from the analysis because they would be eligible for only a limited type of postsecondary education. The following analysis of postsecondary education access, therefore, represents individuals who were in the eighth grade in 1988 and who earned a high school diploma or alternative high school credential by 1994.

[10]For a profile of the NELS eighth-grade cohort with disabilities, see Rossi et al. (1997). The total percentage of students with disabilities and the distribution of disability types reported here differ slightly from what Rossi et al. reported for the definition of disabilities used in that report. Rossi et al. reported findings from the Base-Year survey in 1988, while this study is based on the Third Follow-up in 1994. This means that students had to participate in all three follow-up surveys; thus, the sample was somewhat smaller.

Figure 4—Percentage distribution of 1988 eighth graders whose parents indicated that their children had a disability and received special services, and among those with disabilities, the percentage reporting each disability type



*Parent reported student had any other disability including health problems, emotional problems, mental retardation, or other physical disabilities and had received services for it.

NOTE: Percentages do not sum to 100 because some individuals reported multiple disabilities.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up Survey, 1994 (NELS:88/94), Data Analysis System.

Table 20—Percentage distribution of 1988 eighth graders according to high school completion status as of 1994, by disability status and type

	1994 high school diploma status			
	High school diploma	GED or equivalent certificate	Enrolled in high school or working toward GED	Dropped out
Total	82.0	6.0	5.2	6.8
Does not have a disability	83.8	5.9	4.3	6.0
Has a disability	72.4	6.7	10.6	10.3
Visual impairment	77.3	4.9	15.8	2.0
Hearing impairment or deaf	75.5	9.8	10.3	4.4
Speech impairment	87.0	2.3	6.0	4.7
Orthopedic impairment	75.0	1.7	5.9	17.4
Learning disability	71.4	6.8	9.6	12.3
Other disability or impairment*	67.0	7.2	14.3	11.5

*Parent reported student had any other disability, including health problems, emotional problems, mental retardation, or other physical disabilities, and had received services for it.

NOTE: Percentages may not sum to 100 due to rounding. GED refers to passing the General Education Development exam.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up Survey, 1994 (NELS:88/94), Data Analysis System.

Postsecondary Enrollment

Among 1988 eighth graders who completed high school by 1994, a majority of students both with and without disabilities had enrolled in some form of postsecondary education by 1994 (table 21). Students with disabilities, however, were somewhat less likely to enroll (63 percent) than those without disabilities (72 percent). There were also differences relative to where students enrolled. Compared to students without disabilities, those with disabilities were much less likely to enroll in 4-year institutions (either public or private, not-for-profit), and were more likely to enroll in public 2-year institutions. The majority of students without disabilities (62 percent) enrolled in the 4-year sector, while the majority of students with disabilities enrolled in sub-baccalaureate institutions (58 percent).

Because the sample of students with each type of disability is small, it is difficult to find statistical differences with respect to where students enrolled. However, comparing students with specific types of disabilities to all students with disabilities, those with orthopedic impairments were much more likely to enroll in the 4-year sector (71 versus 42 percent).

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Table 21—Among 1988 eighth graders who completed high school, the percentage who enrolled in postsecondary education by 1994, and percentage distribution according to type of institution, by disability status and type

		4-year institutions			Other institutions		
	Total enrolled	Total	Public	Private, not-for-profit	Total	Public 2-year	Other[1]
Total	70.4	59.4	39.8	19.6	40.6	34.4	6.2
Does not have a disability	71.7	61.5	41.3	20.2	38.6	33.3	5.3
Has a disability	62.8	42.0	28.1	14.0	58.0	44.9	13.1
Visual impairment	70.4	48.4	30.9	17.6	51.6	44.2	7.4
Hearing impairment or deaf	60.2	39.8	33.5	6.3	60.2	47.0	13.2
Speech impairment	58.5	49.0	34.5	14.5	51.0	47.6	3.5
Orthopedic impairment	73.9	71.4	53.6	17.8	28.7	23.6	5.1
Learning disability	57.5	28.2	17.6	10.5	71.8	53.9	17.9
Other disability or impairment[2]	65.9	44.3	28.4	15.9	55.7	42.8	13.0

[1]Students enrolled in private, for-profit institutions; public less-than-2-year institutions; or private, not-for-profit less-than-4-year institutions.

[2]Parent reported student had any other disability, including health problems, emotional problems, mental retardation, or other physical disabilities, and had received services for it.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up Survey, 1994 (NELS:88/94), Data Analysis System.

Postsecondary Aspirations and Academic Preparation

In order to better understand the differences in postsecondary enrollment between students with and without disabilities, the analysis determined how the two groups differed with respect to their educational aspirations and their academic preparation for college. Students' aspirations and academic preparation are strong predictors of postsecondary degree attainment (e.g., Tinto 1993, p. 38). Students with disabilities who completed high school by 1994 differed in both respects from their counterparts without disabilities.

When asked in the eighth grade what their educational aspirations were, students with disabilities had somewhat lower collegiate aspirations than those of their counterparts without disabilities (table 22). While more than half aspired to a bachelor's degree or higher (57 percent), they were less likely than students without disabilities to have such aspirations (72 percent). Conversely, students with disabilities were more likely to aspire to some postsecondary education short of a bachelor's degree (29 versus 20 percent) and more likely to have no aspirations

Table 22—Among 1988 eighth graders who completed high school, the percentage distribution according to their educational aspirations reported in the eighth grade, by disability status and type

	High school or less	Some postsecondary education	Bachelor's degree or higher
Total	9.0	21.1	69.9
Does not have a disability	8.3	20.2	71.5
Has a disability	14.7	28.5	56.8
Visual impairment	26.0	17.4	56.7
Hearing impairment or deaf	14.8	25.1	60.1
Speech impairment	22.5	24.3	53.1
Orthopedic impairment	12.4	16.0	71.6
Learning disability	17.8	35.6	46.6
Other disability or impairment*	10.6	22.1	67.3

*Parent reported student had any other disability, including health problems, emotional problems, mental retardation, or other physical disabilities, and had received services for it.

NOTE: Percentages may not sum to 100 due to rounding.

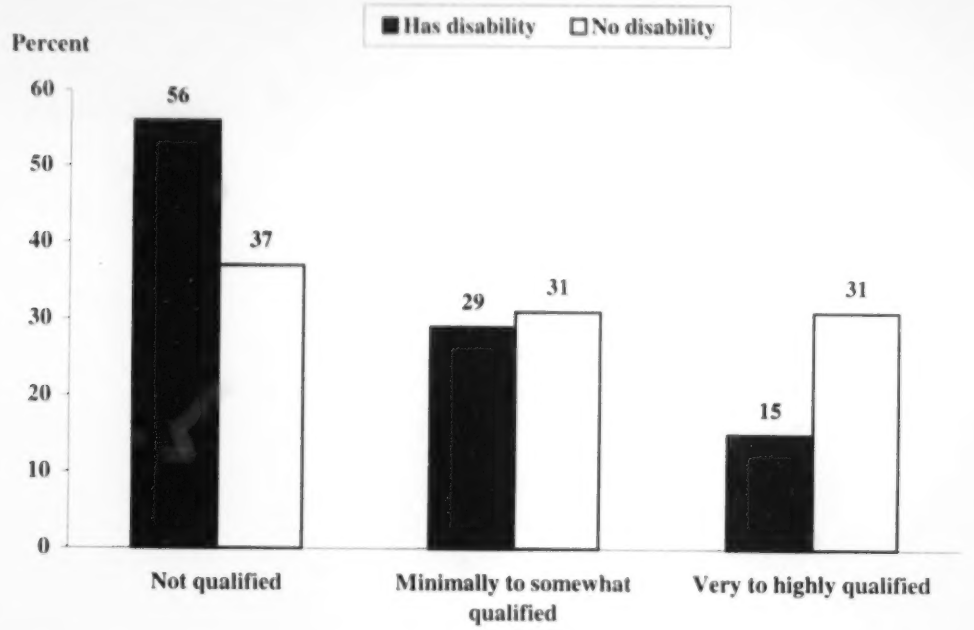
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up Survey, 1994 (NELS:88/94), Data Analysis System.

beyond high school (15 versus 8 percent). Thus, when students are about to begin high school and prepare for college, even among students who were academically capable of completing high school, students with disabilities had lower educational aspirations than their counterparts without disabilities.

In this analysis, the academic preparation of students with and without disabilities was assessed with an indicator that measures how qualified students are for admission to a 4-year college. The index, first developed by Berkner et al. (1997), is based on five measures of academic performance: cumulative GPA, senior class rank, the NELS 1992 composite test scores, and the SAT and ACT admission test scores. Students were classified according to the highest level they had achieved on any one of the five criteria for which data were available. In order to be at least minimally qualified for admission to a 4-year college, students had to achieve one of the following levels or higher: GPA=2.7; class rank percentile=54; combined SAT=820; ACT=19; and the 1992 NELS composite test score percentile=56.

The level of college qualification of students with and without disabilities is shown in figure 5 and table 23. It is evident that among 1988 eighth graders who completed high school by 1994, students with disabilities were much less likely to be even minimally qualified for admission to a 4-year college than were students without disabilities. In fact, a majority (56 percent)

Figure 5—Among 1988 eighth graders who completed high school by 1994, the percentage distribution according to a 4-year college qualification index,* by disability status



*Based on an index of 5 measures including high school GPA, rank in class, NELS 1992 aptitude test, and SAT and ACT test scores among NELS 1992 high school graduates who enrolled in a 4-year college. "Not qualified"—no value on any criterion that placed them in the top 75 percent of 4-year college students; "Minimally qualified"—had at least one value that placed them in the top 75 percent of 4-year college students; "Somewhat qualified"—had at least one value that placed them in the top 50 percent of 4-year college students. "Very qualified"—had at least one value that placed them in the top 25 percent of 4-year college students; "highly qualified"—had at least one value that placed them in the top 10 percent of 4-year college students.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up Survey, 1994 (NELS:88/94), Data Analysis System.

were not qualified, compared with about 37 percent of students without disabilities. Thus, even though a majority of students with disabilities aspired to a college degree, less than half were at least minimally qualified to enroll in a 4-year college. This suggests that students with disabilities may not be getting the academic preparation necessary for them to achieve their goals.

Table 23—Among 1988 eighth graders who completed high school, the percentage distribution according to a 4-year college qualification index,[1] by disability status and type

	Not qualified	Minimally to somewhat qualified	Very to highly qualified
Total	39.9	30.9	29.2
Does not have a disability	37.3	31.3	31.4
Has a disability	56.3	29.0	14.7
Visual impairment	40.5	45.6	14.0
Hearing impairment or deaf	55.2	34.0	10.8
Speech impairment	43.7	34.5	21.9
Orthopedic impairment	43.7	25.3	31.0
Learning disability	66.8	27.2	6.0
Other disability or impairment[2]	57.4	23.1	19.6

[1]Based on an index of 5 measures including high school GPA, rank in class, NELS 1992 aptitude test, and SAT and ACT test scores among NELS 1992 high school graduates who enrolled in a 4-year college. "Not qualified"—no value on any criterion that placed them in the top 75 percent of 4-year college students; "minimally-qualified"—had at least one value that placed them in the top 75 percent of 4-year college students; "somewhat qualified"—had at least one value that placed them in the top 50 percent of 4-year college students; "very qualified"—had at least one value that placed them in the top 25 percent of 4-year college students; "highly qualified"—had at least one value that placed them in the top 10 percent of 4-year college students.
[2]Parent reported student had any other disability, including health problems, emotional problems, mental retardation, or other physical disabilities, and had received services for it.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up Survey, 1994 (NELS:88/94), Data Analysis System.

When postsecondary enrollment is viewed relative to college qualification, differences between students with and without disabilities are also evident (table 24). Among students who were minimally to somewhat qualified for admission to a 4-year institution, 41 percent of students with disabilities enrolled in a 4-year college, compared with about 54 percent of students without disabilities. In other words, despite being at least minimally qualified for admission to a 4-year college, students with disabilities were less likely to enroll in the 4-year sector than their counterparts without disabilities. If these students aspire to a bachelor's degree they may be reducing their chances of actually attaining the degree. Previous research has shown that less than 40 percent of students with a bachelor's degree goal who first enroll in a public 2-year institution actually transfer to a 4-year college (McCormick 1997).

Students with and without disabilities who were very to highly qualified[11] for admission to a 4-year college enrolled in the 4-year sector at the same rate (79 percent). In addition, among those who were not qualified for admission to a 4-year institution, regardless of disability status, roughly 40 percent had enrolled in either the public 2-year sector or in other types of institutions.

[11]For detailed definition, see appendix C under glossary entry for "CQCOMVI."

Table 24—Among 1988 eighth graders who completed high school, the percentage distribution according to postsecondary enrollment by 1994, by college qualification level and disability status

	Type of first institution			
	4-year sector	Public 2-year	Other[1]	Did not enroll
Total	44.0	23.8	3.8	28.4
Index of college qualification[2]				
Not qualified				
Does not have disability	0.0	32.0	7.4	60.6
Has disability	0.0	29.5	11.4	59.1
Minimally to somewhat qualified				
Does not have disability	53.6	25.3	3.0	18.2
Has disability	40.7	34.8	7.4	17.1
Very to highly qualified				
Does not have disability	78.7	14.5	1.6	5.3
Has disability	79.2	15.6	1.8	3.4

[1]Students enrolled in private, for-profit institutions; public less-than-2-year institutions; or private, not-for-profit less-than-4-year institutions.

[2]Based on an index of 5 measures including high school GPA, rank in class, NELS 1992 aptitude test, and SAT and ACT test scores among NELS 1992 high school graduates who enrolled in a 4-year college. "Not qualified"—no value on any criterion that placed them in the top 75 percent of 4-year college students; "minimally-qualified"—had at least one value that placed them in the top 75 percent of 4-year college students; "somewhat qualified"—had at least one value that placed them in the top 50 percent of 4-year college students; "very qualified"—had at least one value that placed them in the top 25 percent of 4-year college students; "highly qualified"—had at least one value that placed them in the top 10 percent of 4-year college students.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up Survey, 1994 (NELS:88/94), Data Analysis System.

Academic Characteristics of Students Enrolled in Postsecondary Education

Consistent with their lower likelihood of being qualified for admission to a 4-year college, among students who enrolled in any postsecondary education by 1994, students with disabilities differed from their counterparts without disabilities on a number of academic performance indicators. For example, they were about half as likely as students without disabilities to have scored in the highest quartile on the NELS eighth-grade composite tests (20 versus 40 percent; table 25). They were also less likely to have taken advanced placement courses in high school (31 versus 46 percent), and conversely, were more likely to have taken courses in remedial English (26 versus 12 percent) and mathematics (28 versus 14 percent; table 26). Other indications that students with disabilities who enrolled in postsecondary education were less academically prepared included having lower average cumulative high school GPAs (2.56 versus 2.85), and among those who took college entrance exams, having lower SAT scores (table 27).

Table 25—Among 1988 eighth graders who enrolled in postsecondary education by 1994, the percentage distribution according to 1988 composite test scores, by disability status and type

	Low quartile	Middle quartiles	High quartile
Total	12.7	49.4	38.0
Does not have a disability	10.7	49.1	40.2
Has a disability	29.9	50.4	19.7
Visual impairment	21.6	59.3	19.1
Hearing impairment or deaf	21.9	56.5	21.6
Speech impairment	27.9	44.1	28.0
Orthopedic impairment	11.6	50.7	37.7
Learning disability	45.1	50.7	4.2
Other health-related disability*	22.3	48.9	28.8

*Parent reported student had any other disability, including health problems, emotional problems, mental retardation, or other physical disabilities, and had received services for it.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up Survey, 1994 (NELS:88/94), Data Analysis System.

Table 26—Among 1988 eighth graders who enrolled in postsecondary education by 1994, the percentage who took remedial or advanced placement courses in high school, by disability status and type

	Remedial English	Remedial mathematics	Advanced placement courses
Total	13.5	15.0	45.1
Does not have a disability	12.1	13.6	46.4
Has a disability	25.6	28.4	31.4
Visual impairment	23.9	29.2	28.4
Hearing impairment or deaf	22.2	27.3	39.8
Speech impairment	26.2	24.5	36.5
Orthopedic impairment	17.4	18.6	52.6
Learning disability	37.8	42.6	12.7
Other health-related disability*	16.2	24.0	40.9

*Parent reported student had any other disability, including health problems, emotional problems, mental retardation, or other physical disabilities, and had received services for it.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up Survey, 1994 (NELS:88/94), Data Analysis System.

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Table 27—Among 1988 eighth graders who enrolled in postsecondary education by 1994, the average high school grade point average and SAT scores, by disability status and type

	Grade point average	Average SAT verbal score	Average SAT math score
Total	2.82	442	497
Does not have a disability	2.85	445	500
Has a disability	2.56	417	458
Visual impairment	2.70	—	—
Hearing impairment or deaf	2.57	—	—
Speech impairment	2.84	410	495
Orthopedic impairment	2.76	—	—
Learning disability	2.41	375	400
Other health-related disability*	2.55	435	465

—Sample size too small for a reliable estimate.

*Parent reported student had any other disability, including health problems, emotional problems, mental retardation, or other physical disabilities, and had received services for it.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up Survey, 1994 (NELS:88/94), Data Analysis System.

Overall, it appears that even among students who completed high school and made the transition to postsecondary education, students with disabilities were less prepared academically than were their counterparts without disabilities. This suggests that students with disabilities may have a more difficult time in their postsecondary program, and as a result, may be less likely to complete their studies or may take longer to complete them. The next section examines the likelihood of college students with disabilities to attain a degree.

Persistence and Attainment in Postsecondary Education

To understand how well students with disabilities persist in their postsecondary programs of study and the rate at which they attain degrees, the Beginning Postsecondary Students Longitudinal Study (BPS:90/94) was used. BPS:90/94 represents a sample of undergraduates who first began their postsecondary education in the 1989–90 school year and who were followed up in 1992 and 1994. As discussed in detail in the "Data" section of this report, this survey differs from NELS:88/94 in that it represents all first-time undergraduates, regardless of age, whereas NELS:88/94 represents a cohort of students of similar ages who entered postsecondary education within 2 years after completing high school (i.e., they were about 17–19 years old at the time). The differences between the two surveys are the reason for the differences in enrollment characteristics. Among the BPS students, about 7 percent reported having a disability (see appendix table B2 for demographic details).

Enrollment Characteristics

As shown in table 28, among students first beginning their postsecondary education, students with disabilities were as likely as their counterparts without disabilities to attend public 2-year colleges (46 and 44 percent). Students with disabilities also were no less likely (statistically) than their counterparts without disabilities to attend public 4-year colleges and universities (23 and 29 percent respectively). However, they were less likely than students without disabilities to attend private, not-for-profit 4-year colleges and universities (9 versus 14 percent) and more likely to attend other types of postsecondary institutions, which include for-profit vocational institutions (21 versus 14 percent).

Persistence and Degree Attainment

Because the BPS survey covers a 5-year period, not all students had completed their degrees by 1994. Therefore, the overall postsecondary outcome of BPS students is defined as persistence, which means that students either attained a degree or were still enrolled in 1994. Viewed from this perspective, about 53 percent of students with disabilities had persisted in their postsecondary program. In contrast, 64 percent of students without disabilities had done so (figure 6, table 29).

Table 28—Percentage distribution of 1989–90 beginning postsecondary students according to first institution attended, by disability status and type

	Public 4-year	Private, not-for-profit 4-year	Public 2-year	Other[1]
Total	28.5	13.7	43.7	14.1
Does not have a disability	28.9	14.1	43.5	13.5
Has a disability	23.4	9.3	46.2	21.1
Visual impairment	32.2	10.0	50.8	7.0
Hearing impairment or deaf	18.8	6.5	47.3	27.4
Speech impairment	—	—	—	—
Orthopedic impairment	24.6	8.2	38.6	28.5
Learning disability	15.1	9.8	62.3	12.8
Other disability or impairment[2]	26.4	11.2	32.0	30.4

—Sample size too small for a reliable estimate.

[1]Students enrolled in private, for-profit institutions; public less-than-2-year institutions; or private, not-for-profit less-than-4-year institutions.

[2]Student reported having other health-related disabilities or limitations.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

Table 29—Percentage distribution of 1989–90 beginning postsecondary students according to postsecondary persistence status, by disability status and type: 1994

	Persisted			Not enrolled/ no degree or certificate
	Total	Attained degree or certificate	Enrolled in 1994	
Total	63.2	50.0	13.3	36.8
Does not have a disability	64.1	50.7	13.4	36.0
Has a disability	52.9	41.1	11.8	47.2
Visual impairment	66.1	53.4	12.7	33.9
Hearing impairment or deaf	49.8	40.0	9.9	50.2
Speech impairment	—	—	—	—
Orthopedic impairment	54.8	45.2	9.5	45.2
Learning disability	52.3	36.6	15.8	47.7
Other disability or impairment*	43.4	35.2	8.2	56.7

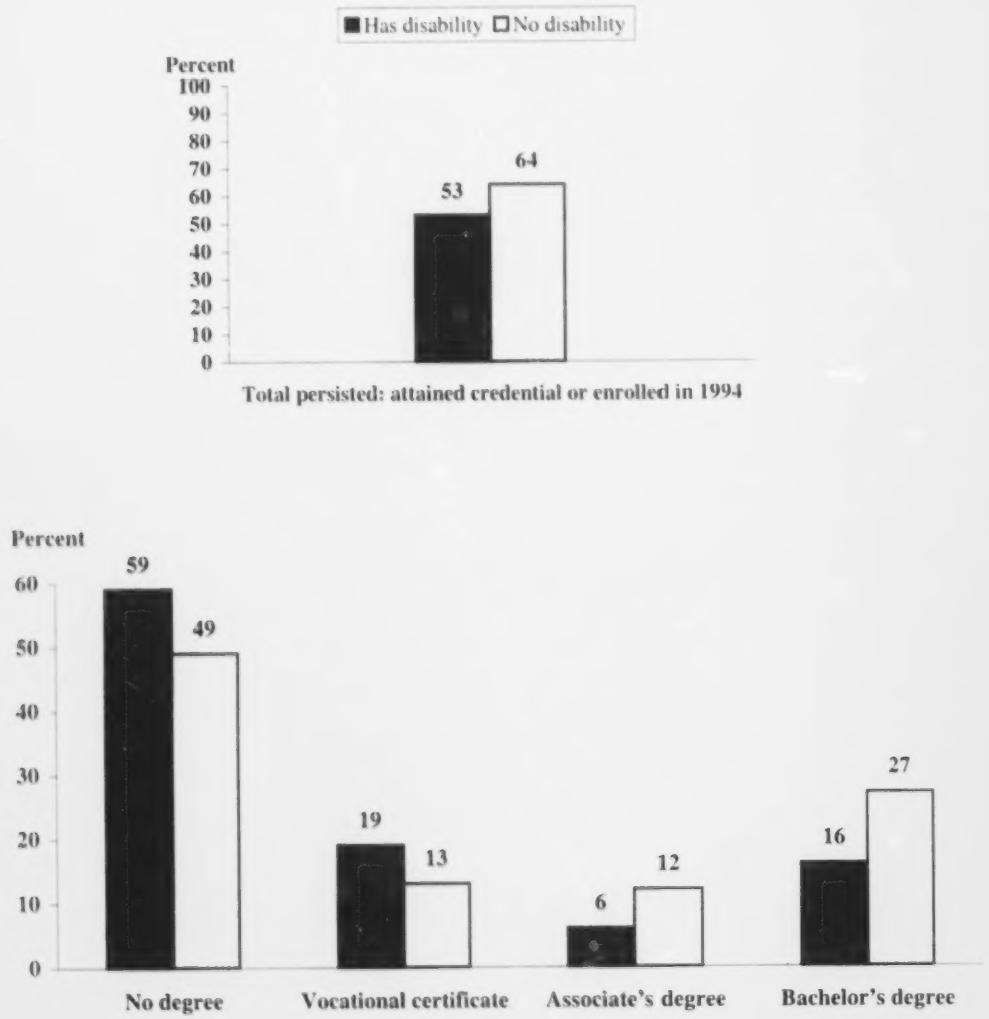
—Sample size too small for a reliable estimate.

*Student reported having other health-related disabilities or limitations.

NOTE: Percentages may not sum to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

Figure 6—Percentage of 1989–90 beginning postsecondary students according to their persistence status in 1994 and highest degree attained, by disability status



NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

In keeping with persistence differences, the likelihood of attaining a degree or certificate within 5 years also differed relative to disability status. About 41 percent of students with disabilities had attained a degree or vocational certificate, compared with 51 percent of students without disabilities (table 29). Correspondingly, a higher proportion of students with disabilities

had left college without earning a degree (47 versus 36 percent), while similar proportions were still enrolled (12 percent and 13 percent, respectively).

With respect to the highest degree attained, students with disabilities were less likely than those without disabilities to have attained bachelor's or associate's degrees (table 30). While it appears as though they were more likely than students without disabilities to complete vocational certificates (19 and 13 percent, respectively), there was not enough statistical evidence to draw this conclusion. When looking within institutional sector, many differences remained. For example, among those enrolled in public 4-year institutions, 33 percent of students with disabilities had completed bachelor's degrees, compared with 48 percent of students without disabilities. Among students enrolled in public 2-year institutions, similar proportions of students with and without disabilities earned some kind of postsecondary credential, though students without

Table 30—Percentage distribution of 1989–90 beginning postsecondary students according to highest undergraduate degree attained by 1994, by disability status and first institution attended

	None	Certificate	Associate's	Bachelor's
Total	50.1	12.9	11.2	25.8
Does not have a disability	49.3	12.5	11.6	26.6
Has a disability	58.9	18.8	6.0	16.3
Public 4-year				
Does not have a disability	44.5	2.8	4.9	47.9
Has a disability	55.5	8.5	2.7	33.4
Private, not-for-profit 4-year				
Does not have a disability	27.8	2.0	3.0	67.1
Has a disability	34.8	5.8	2.4	56.9
Public 2-year				
Does not have a disability	63.0	12.3	18.4	6.3
Has a disability	66.2	20.5	7.3	6.1
Other institutions*				
Does not have a disability	39.6	44.9	13.3	2.3
Has a disability	59.4	32.8	6.2	1.6

*Students enrolled in private, for-profit institutions; public less-than-2-year institutions; or private, not-for-profit less-than-4-year institutions.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

disabilities were more likely to earn associate's degrees (18 versus 7 percent). About 6 percent of both groups who started in public 2-year colleges attained bachelor's degrees.

It should be noted, however, that the postsecondary outcomes of students with disabilities might not be directly comparable to those without disabilities. The two groups of students differed in many respects when considering characteristics associated with postsecondary attrition. These attributes (shown in table 31) are correlated with age and have been shown to impede postsecondary persistence and degree attainment (e.g., Berkner et al. 1997). For example, compared to their counterparts without disabilities, students with disabilities were more likely to have delayed their postsecondary enrollment a year or more after finishing high school (43 versus 32 percent). They were also more likely to have completed high school by earning a GED or alternative high school credential (12 versus 6 percent). Corresponding to the age differences between students with and without disabilities, students with disabilities were more likely to have dependents other than a spouse (25 versus 13 percent). Thus, in addition to the obstacles they may experience with their disabilities, students with disabilities enrolled in postsecondary education are also more likely to have family and financial obligations that potentially conflict with their schooling. Despite such impediments, however, within the 5-year time frame, just over half of students with disabilities had persisted in their postsecondary program.

Table 31—Percentage of 1989–90 beginning postsecondary students with characteristics associated with increased risk of postsecondary attrition, by disability status and type

	Delayed enrollment	Part-time enrollment	Worked full time while enrolled	Completed high school by GED or certificate	Financially independent	Has dependents	Single parent
Total	33.0	23.9	28.3	6.4	37.7	13.9	5.4
Does not have a disability	32.2	23.6	28.4	6.0	37.1	13.0	5.0
Has a disability	43.4	27.8	28.0	11.8	44.5	24.5	9.3
Visual impairment	24.0	26.5	26.1	14.3	36.0	23.0	7.2
Hearing impairment or deaf	63.6	37.0	28.7	19.2	56.1	46.5	13.4
Speech impairment	—	—	—	—	—	—	—
Orthopedic impairment	66.1	26.3	21.0	14.7	68.0	34.9	15.3
Learning disability	25.8	34.8	40.0	1.9	24.5	10.3	2.6
Other disability or impairment*	42.6	27.2	18.0	20.2	43.1	26.3	13.5

—Sample size too small for a reliable estimate.

*Student reported having other health-related disabilities or limitations.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study—Second Follow-up (BPS:90/94), Data Analysis System.

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Controlling for Factors Related to Persistence

In order to ascertain whether having a disability is associated with persistence independently of other related factors (such as those discussed in the previous section), it is necessary to conduct a multivariate analysis. For this purpose, a regression model was used.[12] The dependent variable was defined as the likelihood of either attaining a degree or being enrolled in 1994 (i.e., a student persisted or did not). In addition to disability status, the model included a number of independent variables that represent various aspects of students' background and family characteristics as well as institutional characteristics. They are listed in table 32.

Column one shows the percentages of students who persisted in postsecondary education for each independent variable category. Column two represents the corresponding percentages after being adjusted for the covariation of the independent variables included in the model (i.e., based on the regression equation). Asterisks indicate when a particular group differs significantly from the comparison group (shown in italics).

The results indicate that even after controlling for student background characteristics and factors known to affect persistence, students with disabilities still had lower 5-year persistence rates than their counterparts without disabilities. The unadjusted persistence rate for students with disabilities was 53 percent, and the corresponding rate for students without disabilities was 64 percent. After adjustment, the rates were 56 percent and 64 percent, respectively. However, there are other factors not included in the model that might account for such differences. Because the BPS survey represents a sample of students already enrolled in postsecondary education, there were few high school academic preparation or performance indicators.[13] As was discussed previously in this report, high school students with disabilities who enrolled in postsecondary education were more likely to have taken high school remedial courses and less likely to have taken advanced placement courses, indicating that they may have been less prepared than their counterparts to undertake college-level courses. Finally, given the age differences between undergraduates with and without disabilities, it is also possible that students with disabilities who leave college may be more likely to return after a long interruption, and therefore, their experience would not be captured within the 5-year time frame of the survey.

[12]See appendix D for details on the methods used.

[13]There is a new BPS survey currently under way of students who began postsecondary education in 1995–96. This data set includes students' ACT/SAT scores and indicators of courses taken while in high school.

Table 32—Percentage of beginning postsecondary students who attained a degree or were enrolled in 1994 and the adjusted percentage after controlling for the covariation of the variables listed in the table[1]

	Unadjusted percentage[2]	Adjusted percentage[3]	Least squares coefficient[4]	Standard error[5]
Total	63.2	63.2	74.4	1.8
Disability status				
Has disability	52.9*	56.2*	-7.5	2.7
No disability	*64.1*	*63.8*	†	†
Attendance status in 1989				
Part-time	47.7*	54.4*	-11.6	1.9
Full-time	*69.9*	*66.0*	†	†
Institution control				
Private, not-for-profit	77.9*	67.5*	5.8	2.1
Private, for-profit	61.9	67.4	5.7	3.1
Public	*60.2*	*61.7*	†	†
Timing of enrollment				
Delayed enrollment	*44.9*	55.7*	-11.2	2.3
Did not delay	72.1*	*66.9*	†	†
Dependency status				
Independent	48.2*	58.5*	-7.6	2.1
Dependent	*73.0*	*66.1*	†	†
Employment status				
Worked full time while enrolled	52.8*	60.6*	-3.7	1.7
Did not work full time	*67.6*	*64.3*	†	†
Gender				
Female	64.6*	64.6*	3.1	1.4
Male	*61.6*	*61.5*	†	†
High school completion				
GED/credential	40.3*	54.8*	-9.0	3.1
High school diploma	*64.8*	*63.8*	†	†
Dependents				
One or more children	45.8*	65.8	3.0	2.5
No children	*66.4*	*62.8*	†	†
Institution level				
2-year	52.3*	58.2*	-9.3	1.7
Less-than-2-year	64.5*	69.3	1.8	3.6
4-year	*75.0*	*67.5*	†	†

Table 32—Percentage of beginning postsecondary students who attained a degree or were enrolled in 1994 and the adjusted percentage after controlling for the covariation of the variables listed in the table[1]—Continued

	Unadjusted percentage[2]	Adjusted percentage[3]	Least squares coefficient[4]	Standard error[5]
Socioeconomic status				
Low quartile	46.9*	59.1	-3.0	2.2
High quartile	73.1	65.9*	3.8	1.6
Middle quartiles	*59.8*	*62.2*	†	†

*$p \leq .05$.

†Not applicable for the reference group.

[1]The italicized group in each category is the reference group being compared.

[2]The estimates are from the BPS:90/94 Undergraduate Data Analysis System.

[3]The percentages are adjusted for differences associated with other variables in the table (see appendix D).

[4]Least squares coefficient, multiplied by 100 to reflect percentage (see appendix D).

[5]Standard error of least squares coefficient, adjusted for design effect, multiplied by 100 to reflect percentage (see appendix D).

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990–94 Beginning Postsecondary Student Survey (BPS:90/94), Data Analysis System.

College Graduates

While students with disabilities were less likely to persist to degree attainment within 5 years, the following results suggest that among those who did attain a bachelor's degree, early employment and graduate school enrollment differences between students with and without disabilities were relatively modest. Among 1992–93 bachelor's degree recipients, about 4 percent identified themselves as students with disabilities (see appendix table B3 for demographic details).

Employment

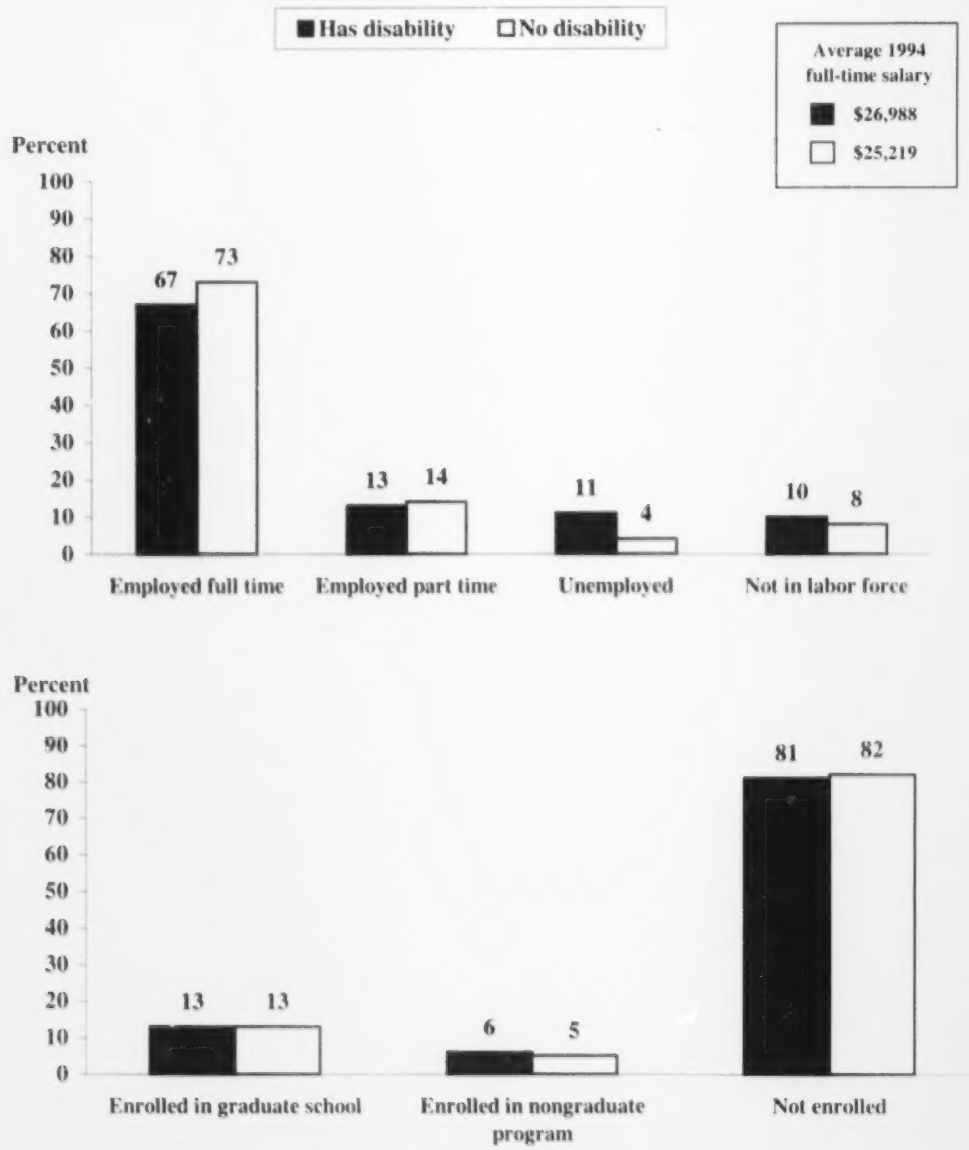
Regardless of disability status, most college graduates were working full time in April 1994 (figure 7, table 33). Nearly 70 percent of students with disabilities (67 percent) and 73 percent of those without disabilities who obtained a bachelor's degree in 1992–93 were working full time in April 1994. An additional 13 percent and 14 percent, respectively, were working part time. Compared to their counterparts without disabilities, those with disabilities were more likely to be unemployed (11 versus 4 percent).[14]

Students with and without disabilities had comparable 1994 full-time annual salaries: $26,988 and $25,219. There were also no differences between the two groups with respect to how closely related their 1994 occupation was to their bachelor's degree. For example, 58 percent of college graduates with disabilities reported that their occupation was closely related to their degree, as did 55 percent of those without disabilities (table 34).

Similarly, there were few differences in the types of occupations by disability status (table 35). For example, 39 and 37 percent of students with and without disabilities reported working in professional occupations or as teachers, and about one-fifth of both groups reported that they were managers or administrators.

[14]There is not a large enough sample of students with individual disabilities to detect statistical differences in students' employment status by disability type.

Figure 7—Among 1992–93 bachelor's degree recipients, percentage distribution according to employment status and graduate school enrollment, by disability status



NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, First Follow-up (B&B:93/94), Data Analysis System.

Table 33—Percentage distribution of 1992–93 bachelor's degree recipients according to their employment status in April 1994, by disability status and type

	Employed full time	Employed part time	Unemployed	Out of labor force
Total	73.1	13.9	4.5	8.5
Does not have a disability	73.2	14.1	4.3	8.3
Has a disability	66.7	12.8	10.7	9.8
Visual impairment	57.8	14.9	14.5	12.8
Hearing impairment or deaf	76.8	10.2	4.4	8.5
Speech impairment	—	—	—	—
Orthopedic impairment	64.1	16.4	10.0	9.5
Learning disability	69.8	11.3	5.0	14.0
Other disability or impairment*	62.5	9.0	19.6	8.9

—Sample size too small for a reliable estimate.

*Student reported having other health-related disabilities or limitations.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, First Follow-up (B&B:93/94), Data Analysis System.

Table 34—Average full-time salaries and the percentage distribution of employed 1992–93 bachelor's degree recipients according to how closely April 1994 occupation is related to their degree, by disability status and type

	Average full-time salary in 1994	Occupation related to degree		
		Closely	Somewhat	Not at all
Total	$25,274	54.7[1]	20.3	25.0[1]
Does not have a disability	25,219	55.2	19.9	24.9
Has a disability	26,988	57.5	20.8	21.6
Visual impairment	26,730	48.1	19.5	32.4
Hearing impairment or deaf	25,999	52.8	33.2	14.0
Speech impairment	—	—	—	—
Orthopedic impairment	23,345	64.2	16.3	19.5
Learning disability	—	64.9	10.3	24.8
Other disability or impairment[2]	23,634	60.0	27.7	12.3

—Sample size too small for a reliable estimate.

[1]Total percentage not within the range of those with or without disabilities because of missing cases on the disability variable.

[2]Student reported having other health-related disabilities or limitations.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, First Follow-up (B&B:93/94), Data Analysis System.

Table 35—Percentage distribution of 1992–93 bachelor's degree recipients according to April 1994 occupation, by disability status and type

	Clerical	Craft/skilled operative/ technical	Farmer	Laborer	Manager/ administrator	Military/ protective service	Professional/ teacher	Proprietor/ owner	Sales	Service	Other[1]
Total	17.9	8.9	1.0	1.1[2]	19.6[2]	2.0	37.4	0.5	7.1	4.3	0.2
Does not have a disability	17.9	8.9	1.1	1.0	19.7	2.0	37.4	0.5	7.1	4.3	0.2
Has a disability	17.1	10.6	0.7	0.6	20.9	3.3	38.6	1.0	5.2	1.8	0.3
Visual impairment	31.1	9.0	0.0	0.0	12.1	4.9	38.4	0.0	3.1	0.0	1.6
Hearing impairment or deaf	20.8	16.6	0.0	0.0	21.6	3.2	31.3	2.9	0.5	3.1	0.0
Speech impairment	—	—	—	—	—	—	—	—	—	—	—
Orthopedic impairment	16.0	9.7	0.8	1.4	18.3	3.3	41.3	1.3	6.5	1.4	0.0
Learning disability	9.7	9.3	0.0	1.6	33.3	2.4	28.7	0.0	11.3	3.9	0.0
Other disability or impairment[3]	6.5	12.7	0.0	1.4	24.5	3.4	42.9	0.0	7.5	1.2	0.0

—Sample size too small for a reliable estimate.

[1]Students were considered to have another occupation if they reported not working or homemaking.

[2]Total percentage not in range because of missing cases on the disability variable.

[3]Student reported having other health-related disabilities or limitations.

NOTE: Percentages may not sum to 100 due to rounding. Values of 0.0 are estimates less than 0.05 percent.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, First Follow-up (B&B:93/94), Data Analysis System.

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Graduate School Enrollment

College graduates with disabilities were equally as likely as those without disabilities to enroll in graduate school within a year after graduating from college. In fact, as of April 1994, nearly identical proportions of college graduates with and without disabilities (13 percent) were enrolled in graduate school (figure 7; table 36). Similarly, 6 percent and 5 percent, respectively, had enrolled in further education not at the graduate level.

Table 36—Percentage distribution of 1992–93 bachelor's degree recipients according to enrollment in further education in April 1994, by disability status and type: 1994

	Enrolled in graduate school	Enrolled in nongraduate program	Not enrolled
Total	12.6	5.3	82.1
Does not have a disability	12.6	5.3	82.2
Has a disability	12.8	6.3	80.9
Visual impairment	32.7	0.0	67.3
Hearing impairment or deaf	10.7	1.5	87.8
Speech impairment	—	—	—
Orthopedic impairment	7.9	1.0	91.1
Learning disability	11.2	8.4	80.4
Other disability or impairment*	17.8	15.5	66.7

—Sample size too small for a reliable estimate.

*Student reported having other health-related disabilities or limitations.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, First Follow-up (B&B:93/94), Data Analysis System.

Finally, there were also indications that graduate school enrollment in the subsequent year would be similar for students with and without disabilities. The percentage of students reporting that they had ever applied to graduate school is shown in table 37. As was the case with immediate enrollment, there were no differences in the percentage who applied, in the number of schools applied to, and the number of acceptances to graduate school.

Thus, for those students with disabilities who were able to achieve a bachelor's degree, their early employment and graduate school opportunities did not seem any more limited than their counterparts without disabilities.

Table 37—Percentage of 1992–93 bachelor's degree recipients who ever applied and were accepted to graduate school, by disability status and type: 1994

	Percentage ever applied to graduate school	Average number of graduate schools applied to	Average number of schools accepted
Total	28.7	2.8	1.7
Does not have a disability	28.9	2.8	1.7
Has a disability	27.6	2.5	1.9
Visual impairment	37.3	—	—
Hearing impairment or deaf	28.2	—	—
Speech impairment	—	—	—
Orthopedic impairment	24.5	2.1	1.7
Learning disability	29.3	—	—
Other disability or impairment*	27.9	—	—

—Sample size too small for a reliable estimate.

*Student reported having other health-related disabilities or limitations.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, First Follow-up (B&B:93/94), Data Analysis System.

Summary and Conclusions

Among all undergraduates enrolled in postsecondary education, students with disabilities made up roughly 6 percent of those enrolled in the 1995–96 academic year. Compared to their counterparts without disabilities, undergraduates who identified themselves as having disabilities were more likely to be male, white (non-Hispanic), and older. Nearly one-quarter of undergraduates with disabilities were age 40 or older. Students with disabilities were less likely to be enrolled in 4-year colleges and universities and more likely to attend other institutions, primarily public 2-year colleges.

In order to enroll in higher education, students with disabilities must overcome substantial obstacles related to academic preparation. Longitudinal data of 1988 eighth graders revealed that despite the fact that over half of the eighth graders with disabilities aspired to a bachelor's degree (57 percent) and another 29 percent aspired to some postsecondary education, just two-thirds had enrolled after completing high school. In contrast, roughly three-quarters of students without disabilities had done the same. The reasons for this difference may in large part have to do with differences in academic preparation. Students with disabilities took more remedial courses and fewer advanced placement courses. Students with disabilities were also much less likely than their counterparts without disabilities to be even minimally qualified for admission to a 4-year college. But even among those who were at least minimally qualified academically to enroll at the 4-year level, students with disabilities were more likely than similarly qualified students without disabilities to enroll at the 2-year level instead.

For students who do enroll in college, differences in academic preparation may also affect their ability to complete a degree or certificate. Among students who first enrolled in postsecondary education in 1989–90, students with disabilities had lower SAT scores and were more likely to be enrolled in remedial coursework. By 1994, nearly half (47 percent) of those with disabilities had left college without earning a degree or postsecondary credential compared with just over one-third (36 percent) of students without disabilities.

On the other hand, for students with disabilities who earn a bachelor's degree, the outcomes appeared more positive. Among 1992–93 college graduates, students with disabilities had similar full-time starting salaries and were just as likely to report that their job was related to their bachelor's degree. Similarly, college graduates with disabilities were just as likely as their counterparts without disabilities to enroll in graduate school immediately after earning a bachelor's degree.

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Appendix A—Comparing Data on Students With Disabilities

The percentage of students with disabilities enrolled in postsecondary institutions is relatively small. Because of their small sample size, differences between surveys resulting from the ways in which disabilities are defined or the way questions are asked can appear very large. Table A1 compares data from NPSAS:96, the source of data for this statistic in this report, and results from two other comparable studies.

The first study was published as a research brief on undergraduates with disabilities by the American Council on Education (Henderson 1995). This report is the most comparable to the current report because it is based on an earlier NPSAS survey. Nevertheless, there appear to be some differences, most notably a decrease among those with orthopedic limitations and an increase among students with learning disabilities between 1993 and 1996. It is unclear whether these are actual changes in the population of students reporting disabilities or differences in samples. The NPSAS surveys, while representative of all students in postsecondary education, may not be entirely representative of students with disabilities in postsecondary education. The

Table A1—Percentage of students with disabilities and the percentage by type of disability: comparing previous reports with NPSAS:96 data

	Any disabilities	Learning disability	Orthopedic limitation	Hearing impaired or deaf	Sight disability	Speech limitation	Other health related disability
				All undergraduates			
Source of data							
ACE-Research brief (1993)[1]	6.5	1.2	2.4	1.3	0.7	0.4	1.5
NPSAS:96[2]	5.5	1.6	1.3	0.9	0.9	0.2	1.2
				Full-time freshmen			
NPSAS:96[3]	5.7	2.1	0.8	0.7	0.9	0.3	1.3
CIRP (1996)[4]	7.0	3.0	1.0	1.0	2.0	0.4	1.7

[1]Henderson, C., *Postsecondary Students with Disabilities: Where Are They Enrolled?* American Council on Education, Research Brief, Volume 6, Number 6, 1995. Based on NPSAS:93 data taken from the NPSAS:93 Data Analysis System.

[2]The data used in this report: NPSAS:96 Data Analysis System.

[3]A sub-set of data used in this report: full-time students identified as beginning their first year: NPSAS:96 Data Analysis System.

[4]Henderson, C., *Profile of 1996 College Freshmen with Disabilities.* HEATH Electronic Newsletter, Volume 1, Number E1, American Council on Education, 1998. Note that there was an additional "other" category reported in this publication, which has been removed for comparison purposes because it was not an option in NPSAS. About 2.0 percent of respondents reported this disability; they were subtracted from the total. The data are from the Cooperative Institutional Research Program (CIRP).

NOTE: Percentages do not sum to totals because some students report multiple disabilities.

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NPSAS sample is selected in three stages. The first two stages involve the selection of institutions. Students are subsequently selected within institutions. Institutions are identified by control (i.e., public; private, not-for-profit; and private, for-profit), by the level of degree offerings (less-than-2-year credentials, associate's degrees, and bachelor's degrees), and by size. It is possible, therefore, that institutions that have special services for students with disabilities may be included in one survey but not the next. In the cases where institutions with special services are included, students with disabilities might be over-represented. Whatever the reason for the difference, there appears to be an increase in students with learning disabilities and a decline in students with orthopedic impairments between 1993 and 1996.

The second study compared to the NPSAS:96 data was published by the HEATH Resource Center of The American Council of Education (Henderson 1998) and is based on data from the Cooperative Institutional Research Programs (CIRP). CIRP is a survey of entering freshmen that has been conducted every year since 1966. The HEATH report is based on the 1996 survey. The 1996 CIRP survey was a written questionnaire administered to a sample of 251,000 entering freshmen. On the survey respondents were asked to "mark all that apply" to the questions "Do you have a disability?" Options included: None, Hearing, Speech, Orthopedic, Learning, Health-related, Partially sighted or blind, or Other. The NPSAS survey, in contrast, was administered over the phone (except for certain students with hearing or speech impairments who had the option of using a teletype machine) to approximately 21,000 undergraduates who were asked: "Do you have any disabilities such as hearing, speech, or mobility impairment, or vision problems that can't be corrected with glasses." The respondent was then queried for a specific disability or disabilities. Note that NPSAS students were also asked about "other health related" disabilities but were not offered a more general "other" option that the CIRP respondents were. Therefore, for this comparison, the CIRP "other" category was removed. Approximately 2.0 percent of CIRP freshmen reported the "other" category. Presumably, this would include mental disabilities.

Among comparable categories, there appear to be two notable differences between the CIRP and NPSAS surveys. The CIRP survey has a larger proportion of students reporting learning disabilities and vision impairments. In the case of vision impairments, the NPSAS respondents may have been less likely to report the disability because the question stipulated that the vision impairment not be correctable with glasses, which was not the case in the CIRP survey. However, it is not clear why more students reported learning disabilities in the CIRP survey. It is possible the CIRP respondents felt more comfortable in reporting a learning disability in the privacy of a written survey, which was not observed by anyone else. Alternatively, it is possible that more institutions with special resources for students with learning disabilities were included in the CIRP survey. Whatever the reasons, the differences between the two surveys should be kept in mind when interpreting and generalizing the findings.

Appendix B—Supplemental Tables

Table B1—Percentage of 1988 eighth graders whose parents indicated their children had a disability and received special services, and among those with disabilities, the percentage reporting each disability type, by gender, race–ethnicity, and income

		Has a disability					
	Total with a disability	Visual impairment	Hearing impairment or deaf	Speech impairment	Orthopedic impairment	Learning disability	Other disability or impairment*
Total	11.1	6.7	9.0	9.9	6.2	47.8	35.6
Gender							
Male	12.7	4.9	8.9	11.0	5.6	52.2	33.5
Female	9.4	9.1	9.0	8.2	6.9	41.8	38.3
Race–ethnicity							
White, non-Hispanic	11.5	4.8	10.0	8.6	5.8	51.6	34.4
Black, non-Hispanic	11.0	13.8	4.2	15.0	4.7	29.6	47.5
Hispanic	9.0	12.3	8.2	11.2	8.1	43.2	29.6
Asian/Pacific Islander	6.8	8.6	6.2	15.5	4.3	40.2	40.2
American Indian/Alaskan Native	12.3	—	—	—	—	—	—
Income quartile							
Low quartile	12.8	8.5	9.4	11.6	6.1	42.3	40.3
Middle quartiles	9.8	5.7	9.3	9.3	6.2	50.5	34.3
High quartile	9.8	4.1	7.4	9.8	5.0	53.9	27.0

—Sample size too small for a reliable estimate.

*Parent reported student had any other disability, including health problems, emotional problems, mental retardation, or other physical disabilities, and had received services for it.

NOTE: Percentages will not sum to 100 because some students reported multiple disabilities.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up Survey, 1994 (NELS:88/94), Data Analysis System.

Table B2—Percentage of 1989–90 beginning postsecondary students who reported having a disability, and among those with disabilities, the percentage reporting each disability type, by gender, race–ethnicity, and income

		Has a disability					
	Total with a disability	Visual impairment	Hearing impairment or deaf	Speech impairment	Orthopedic impairment	Learning disability	Other disability or impairment*
Total	7.2	13.5	19.8	4.1	30.5	24.4	21.1
Gender							
Male	9.2	15.2	19.9	4.4	27.8	28.7	19.4
Female	5.5	11.2	19.6	3.7	34.4	18.4	23.5
Race–ethnicity							
White, non-Hispanic	7.8	12.8	21.2	2.6	33.1	23.6	21.5
Black, non-Hispanic	7.7	25.6	12.5	10.5	6.0	36.2	19.0
Hispanic	3.2	—	—	—	—	—	—
Asian/Pacific Islander	2.0	—	—	—	—	—	—
American Indian/Alaskan Native	11.7	—	—	—	—	—	—
Income quartile							
Low quartile	6.6	10.8	18.2	4.4	35.5	21.8	23.3
Middle quartiles	7.7	14.4	17.1	5.0	30.7	21.0	22.6
High quartile	6.8	13.9	29.0	1.3	24.7	36.9	14.4

— Sample size too small for a reliable estimate.

*Student reported having other health-related disabilities or limitations.

NOTE: Percentages will not sum to 100 because some students reported multiple disabilities.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989–90 Beginning Postsecondary Students Longitudinal Study, Second Follow-up (BPS:90/94), Data Analysis System.

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Table B3—Percentage of 1992–93 bachelor's degree recipients who reported having a disability, and among those with disabilities, the percentage reporting each disability type, by gender, race–ethnicity, and income

		Has a disability					
	Total with a disability	Visual impairment	Hearing impairment or deaf	Speech impairment	Orthopedic impairment	Learning disability	Other disability or impairment*
Total	3.7	19.1	15.6	4.0	39.5	14.6	18.1
Gender							
Male	4.3	18.1	19.0	2.9	38.7	13.6	20.4
Female	3.2	20.3	11.8	5.3	40.4	15.8	15.5
Race–ethnicity							
White, non-Hispanic	3.8	18.2	16.8	4.1	39.1	16.5	16.3
Black, non-Hispanic	2.9	—	—	—	—	—	—
Hispanic	3.6	—	—	—	—	—	—
Asian/Pacific Islander	2.5	—	—	—	—	—	—
American Indian/Alaskan Native	11.4	—	—	—	—	—	—
Income quartile							
Low quartile	4.3	17.0	18.2	6.8	40.3	15.0	17.6
Middle quartiles	3.2	16.3	14.0	4.3	44.8	12.9	18.6
High quartile	3.9	23.9	15.2	1.5	33.2	16.1	18.0

—Sample size too small for a reliable estimate.

*Student reported having other health-related disabilities or limitations.

NOTE: Percentages will not sum to 100 because some students reported multiple disabilities.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 Baccalaureate and Beyond Longitudinal Study, First Follow-up (B&B:93/94), Data Analysis System.

Appendix C—Glossary

This glossary describes the variables used in this report. The items were taken directly from the NPSAS:96 undergraduate, NELS:88/94, BPS:90/94, and B&B:93/94 Data Analysis Systems (DAS); see appendix D for a description of the DAS. The variables used in this analysis were either items taken directly from the surveys or derived by combining one or more items in these surveys.

The variables listed in the index below are in the order they appear in the report; the glossary is in alphabetical order by DAS variable name (displayed along the right-hand column).

Glossary Index

NPSAS:96 (p. 63)

DISABILITY

Disability status ..... DISABIL
Visual impairment ..... VISUAL
Deaf or hard of hearing ..... DEAFNESS
Orthopedic impairment ..... ORTHO
Speech impairment ..... SPEECH
Learning disability ..... LEARNDIS
Other health-related disabilities ..... HEALTOTH

DEMOGRAPHIC CHARACTERISTICS

Gender ..... GENDER
Race–ethnicity ..... RACE
Age as of 12/31/95 ..... AGE
Income percentile PCTALL2
Veteran status ..... VETERAN
Number of dependents ..... NDEPEND
Single parent ..... SINGLPAR
Marital status ..... SMARITAL

ENROLLMENT CHARACTERISTICS

Institution type, level, or control ..... SECTOR
Major field of study MAJORS3
Attendance status ..... ATTNSTAT

ACTIVITIES

Employment ..... HRSWORK
Took remedial courses ..... ANYREM
Community service hours ..... COMMHOUR
Counseling services ..... COUNSEL
Cultural activities ..... CULTUR
Job placement ..... JOBPLC
Sports and recreational activities ..... SPORTS

FINANCIAL AID

Dependency status DEPEND2
Received any aid ..... TOTAID
Received federal aid ..... TFEDAID
Received grants ..... TOTGRT
Received loans ..... TOTLOAN
Employer aid ..... EMPLYAMT
Received work study ..... TOTWKST
Received other financial aid ..... TOTOTHR

NELS:88/94 (p. 70)

DISABILITY

Any disabilities ..... DISABIL
Visual impairment ..... VISUAL
Hearing impairment or deaf ..... HEARING
Speech impairment ..... SPEECH
Orthopedic impairment ..... ORTHO
Learning disability ..... LEARNDIS
Other health-related disability ..... OTHERDIS

ACADEMIC

Qualified for 4-year college CQCOMV1
Grade point average (high school transcripts) ..... GPA
Composite test quartile 1988 ..... BY2XQURT
Cumulative SAT score ..... SAT
SAT math ..... SATM
SAT verbal ..... SATV
Educational expectations 1988 ..... BYS45
Type of first postsecondary institution F3SEC2A1

COURSE TAKING

Ever took remedial English F2S13A
Ever took remedial mathematics F2S13B
Ever took AP (advanced placement) course F2S13C

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BPS:90/94 (p. 73)

DISABILITY

Any disabilities ..... DISABLTY
Visual impairment ..... VISUAL
Hearing impaired or deaf ..... DEAFNESS
Speech impairment ..... SPEECH
Orthopedic impairment ..... ORTHO
Learning disability ..... LEARNDIS
Other impairment or disability ..... HEALTOTH

INSTITUTIONAL CHARACTERISTICS

Institution sector OFCO8990

PERSISTENCE AND ATTAINMENT

Overall persistence and attainment ..... PERACUM
Highest undergraduate degree ..... DEGALL

FACTORS ASSOCIATED WITH PERSISTENCE

Delayed enrollment ..... DELAYENR
Attendance status ATTN8990
Worked full time while enrolled EMWK8990
Type of high school completion ..... H_HSDIP
Financial independence DEP8990
Number of children KIDS8990
Single parent status SING8990

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DISABILITY

Any disabilities ..... DISABLTY
Visually impaired or blind ..... VISUAL
Hearing impaired or deaf ..... DEAFNESS
Speech impairment ..... SPEECH
Orthopedic impairment ..... ORTHO
Learning disability ..... LEARNDIS
Other impairment or disability ..... HEALTOTH

EARLY EMPLOYMENT

Employment status in April 1994 ..... EMPLOY22
April 1994 job occupation ..... AJOBOCC
How closely April 1994 job related to field of study ..... AJOBRELT
Average salary at April 1994 job ..... APRANSAL

ACCESS TO GRADUATE SCHOOL

Graduate school enrollment ..... ENROLNOW
Respondent applied to graduate school ..... EVERAPP
Number of graduate schools accepted ..... ACCEPT

NPSAS:96

Age as of 12/31/95 **AGE**

18 years or younger
19–23 years
24–29 years
30–39 years
40 years or older

Took remedial courses **ANYREM**

Student took remedial courses. Based on student's response to the question "During 1995–96, did you take remedial or development courses?" A related question was also asked of those reporting taking remedial classes: "Was this to improve your skills in reading, writing, math, study skills, English language skills?" Asked on student CATI (Yes/No). Asked of undergraduates who were in their first or second year of college.

Attendance status **ATTNSTAT**

Combined attendance intensity and persistence during 1995–96. Intensity refers to the student's full- or part-time attendance while enrolled. Persistence refers to the number of months a student was enrolled during the year. Students were considered to have been enrolled for a full year if they were enrolled eight or more months during 1995–96. Months did not have to be contiguous or at the same institution, and students did not have to be enrolled for a full month in order to be considered enrolled for that month. In prior NPSAS surveys, "full year" had been defined as nine or more months. Includes enrollment at all institutions.

Full-time, full-year	Student was enrolled full time for at least eight months during 1995–96. Additional months enrolled could be part time.
Full-time, part-year	Student was enrolled full time for less than eight months during 1995–96 and attending full time in all of these months.
Part-time, full-year	Student was enrolled eight or more months during 1995–96, and some of these months were part time.
Part-time, part-year	Student was enrolled less than eight months during 1995–96, and some of these months were part time.

Community service hours **COMMHOUR**

Indicates student response to the question "How much time per week did you volunteer?" Asked on student CATI.

Did not volunteer
1–5 hours
6–10 hours
More than 10 hours

Counseling services **COUNSEL**

Indicates whether students used counseling services at the NPSAS institution (Yes/No). One of a series of variables examining students' use of and satisfaction with services and activities at the NPSAS institution. Student response to

the question, "During 1995–96, how often did you use the counseling services? Were you satisfied with the services?" Asked on the student CATI.

Cultural activities **CULTUR**

Indicates whether students participated in cultural activities at the NPSAS institution (Yes/No). One of a series of variables examining students' use of and satisfaction with services and activities at the NPSAS institution. Student response to the question "During 1995–96, how often did you participate in activities including music, art, and drama? Were you satisfied with the activities?" Asked on the student CATI.

Deaf or hard of hearing **DEAFNESS**

Indicates whether student reported being deaf or hard of hearing. For a complete description, see DISABIL. Asked on student CATI (Yes/No). Students who reported being hearing impaired were also asked if they could hear what is said in a normal conversation while wearing a hearing aid, if they usually wore one.

Dependency status **DEPEND2**

Student dependency status for financial aid. Students were considered independent if they met one of the following criteria:

1. Student was 24 years or older as of 12/31/95;
2. Student was a veteran of the U.S. Armed Forces;
3. Student was enrolled in a graduate or professional program (beyond a bachelor's degree) in 1995–96;
4. Student was married;
5. Student was an orphan or ward of the court; or
6. Student had legal dependents other than spouse. Students were considered to have dependents if they had any dependents other than a spouse.

Dependent
Independent, no dependents
Independent, with dependents

Disability status **DISABIL**

Indicates whether a student reported having any disability. Student response to the question "Do you have any disabilities, such as hearing, speech, or mobility impairment, a learning disability or visual problems that can't be corrected with glasses?" Among those reporting disabilities, individual disabilities reported included: hearing impairment (DEAFNESS), other health-related limitation (HEALTOTH), learning disability (LEARNDIS), orthopedic or mobility limitation (ORTHO), speech disability or limitation (SPEECH), and visual impairment (VISUAL). Asked on student CATI.

Employer aid **EMPLYAMT**

Total amount of aid received from employers during 1995–96. Employer aid is aid that students receive from the business, corporation, institution, or individual by whom the student is employed. Employers include the postsecondary institution the student attends if the student is employed in a capacity other than in an assistantship or through a formal work-study program. The proportion of respondents with a positive value for this variable is the proportion with any employer aid.

Gender **GENDER**

Male
Female

Other health-related disabilities **HEALTOTH**

Indicates whether student reported having any other health-related limitation or disability. For a complete description, see DISABIL. Asked on student CATI (Yes/No).

Employment **HRSWORK**

Average number of hours per week that students reported working while enrolled in 1995–96. It is based on the student CATI question "About how many hours did you work per week while you were enrolled?" The variable does not include hours worked when student was not enrolled.

Did not work
1–15 hours
16–20 hours
21–34 hours
35 hours or more

Job placement **JOBPLC**

Indicates whether students used job placement services at the NPSAS institution and indicates whether the student was satisfied with these services. One of a series of variables examining students' use of and satisfaction with services and activities at the NPSAS institution. Student response to the question "During 1995–96, how often did you use the job placement services? Were you satisfied with the services?" Asked on the student CATI.

Learning disability **LEARNDIS**

Indicates whether a student reported having a learning disability. For complete description, see DISABIL. Asked on student CATI (Yes/No).

Major field of study **MAJORS3**

Undergraduate major field of study among those with declared majors. Refers to NPSAS institution for those enrolled in more than one institution.

Humanities	English, liberal arts, philosophy, theology, art, music, speech/drama, art history/fine arts, area studies, African-American studies, ethnic studies, foreign languages, liberal studies, women's studies.
Social/behavioral sciences	Psychology, economics, political science, American civilization, clinical/pastoral care, social work, anthropology/archaeology, history, sociology.

Life sciences	Natural resources, forestry, biological science (including zoology), botany, biophysics, geography, interdisciplinary studies, including biopsychology, environmental studies.
Physical sciences	Physical sciences including chemistry, physics.
Math	Mathematics, statistics.
Computer/information science	Computer/information science, computer programming.
Engineering	Electrical, chemical, mechanical, civil, or other engineering; engineering technology; electronics.
Education	Early childhood, elementary, secondary, special, or physical education; other education; leisure studies; library/archival sciences.
Business management	Accounting, finance, secretarial, data processing, business/management systems, public administration, marketing/distribution, business support, international relations.
Health	Nursing, nurse assisting, community/mental health, medicine, physical education/recreation, audiology, clinical health, dentistry, veterinary medicine, health/hospital, public health, dietetics, other/general health.
Vocational/technical	Mechanic technology including transportation, protective services, construction, air/other transportation, precision production.
Other professional or technical	Agriculture, agricultural science, architecture, professional city planning, journalism, communications, communications technology, cosmetology, textiles, military science, dental/medical technology, home economics, vocational home economics including child care, law, paralegal, basic/personal skills.

Number of dependents **NDEPEND**

Student had one or more dependents not including spouse. Dependents include any individuals, whether children, elders, or others for whom the student was financially responsible.

Orthopedic impairment **ORTHO**

If student reported a disability, indicates whether he or she had an orthopedic impairment. For complete description, see DISABIL. Asked on student CATI (Yes/No). Students with orthopedic disabilities were also asked several qualifying questions including: if they are able to walk for a quarter mile without assistive device or help of another person; if they are able to walk up a flight of stairs without resting; if they are able to lift and carry something as heavy as 10 pounds, such as a bag of groceries; and how difficult it is for them to get in and out of buildings.

Income percentile **PCTALL2**

Income percentile rank for all students.

Low quartile	Student's income fell at or below the 25th percentile.
Middle quartiles	Student's income fell between the 26th and 75th percentile.
High quartile	Student's income fell at or above the 76th percentile.

Race–ethnicity **RACE**

White, non-Hispanic	A person having origins in any of the original peoples of Europe, North Africa, or the Middle East (except those of Hispanic origin).
Black, non-Hispanic	A person having origins in any of the black racial groups of Africa, not of Hispanic origin.
Hispanic	A person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.
Asian/Pacific Islander	A person having origins in any of the peoples of the Far East, Southeast Asia, the Indian subcontinent, or Pacific Islands. This includes people from China, Japan, Korea, the Philippine Islands, Samoa, India, and Vietnam.
American Indian/Alaskan Native	A person having origins in any of the original peoples of North America and who maintains cultural identification through tribal affiliation or community recognition.

Institution type, level, or control **SECTOR**

Indicates the level and control of the NPSAS institution where the student was surveyed. Constructed by combining the level of the NPSAS institution (less-than-2-year, 2-year, or 4-year) and the control of that institution. In some tables only level or control is shown and in others they are combined.

Public, 4-year	A postsecondary institution operated by publicly elected or appointed officials where the program and activities are under the control of these officials and that is supported primarily by public funds that offers 4-year baccalaureate degrees. These institutions may or may not also offer master's, doctoral, or first-professional degrees in one or more programs as the highest degree awarded.
Private, not-for-profit, 4-year	A postsecondary institution that is controlled by an independent governing board and incorporated under Section 501(c)(3) of the Internal Revenue Code that offers 4-year baccalaureate degrees. These institutions may or may not also offer master's, doctoral, or first-professional degrees in one or more programs as the highest degree awarded.

Public, 2-year	A public institution whose program of study results in an award or degree below the baccalaureate level, and is at least 2 years but less than 4 years in duration. These institutions include many community and junior colleges.
Other	Includes postsecondary institutions that do not fall into the previous three categories, such as institutions whose normal program of study is less than 2 years in duration; postsecondary institutions that are privately owned and operated as profit-making enterprises (e.g. career colleges and proprietary institutions); or private, not-for-profit institutions whose program of study results in a degree below the baccalaureate level.

Single parent **SINGLPAR**

Indicates whether student was a single parent in 1995–96. Students were considered to be single parents if they had dependents and were not married. NOTE: Because the number of dependents does not distinguish between dependent children and other dependents such as parents or relatives, single parent is most accurately interpreted as single caretaker. Asked on student CATI (Yes/No).

Marital status **SMARITAL**

Student reported marital status from the FAFSA, marital status on July 1, 1995 reported in the CATI, or institution-reported marital status.

Speech impairment **SPEECH**

If student reported a disability, indicates whether student had a speech impairment in 1995–96. For complete descriptions, see DISABIL. Asked on student CATI (Yes/No). Students with speech impairments were also asked if during a normal conversation, the other person understands his or her speech.

Sports and recreational activities **SPORTS**

Indicates whether students participated in sports and recreational activities at the NPSAS institution (Yes/No). One of a series of variables examining students' use of and satisfaction with services and activities at the NPSAS institution. Student response to the question "During 1995–96, how often did you participate in sports and recreational activities at the NPSAS institution? Were you satisfied with the facilities?"

Received federal aid **TFEDAID**

Total amount of federal aid received by a student in 1995–96 from all federal aid programs. The percentage of students receiving this category of aid was identified by those cases with positive values on this variable.

Received any aid **TOTAID**

Total amount of financial aid received by a student in 1995–96. Includes grants, loans, or work-study, as well as

loans under the PLUS program. The percentage of students with any aid is the percentage with positive amounts recorded for this variable.

Received grants **TOTGRT**

Total amount of grant aid received by a student in 1995–96. Grants are a type of student financial aid that does not require repayment or employment. At the undergraduate level it is usually (but not always) awarded on the basis of need, possibly combined with some skills or characteristics that a student possesses. Grants include scholarships and fellowships. The percentage of students with grants is the percentage with positive amounts recorded for this variable.

Received loans **TOTLOAN**

Total amount of loan aid received by a student in 1995–96. This includes all loans through federal, state, or institutional programs except PLUS loans (which are made to parents). Loans are a type of student financial aid that advances funds and that are evidenced by a promissory note requiring the recipient to repay the specified amounts under prescribed conditions. The percentage of students with loans is the percentage with positive amounts recorded for this variable.

Received other financial aid **TOTOTHR**

Total amount of financial aid received during 1995–96 that was not classified as grants, loans, or work-study. Includes teaching and research assistantships, PLUS loans, veterans' benefits and military tuition aid, vocational rehabilitation and JTPA. Equal to the sum of other federal amounts, other state amounts, and other institutional amounts. The percentage of students receiving this category of aid was identified by those cases with positive values on this variable.

Received work study **TOTWKST**

Total amount of work-study aid received by a student in 1995–96. Work-study programs provide partial reimbursement of wages paid to students. They may be sponsored by the federal or state governments or by the institution. The percentage of students with work study is the percentage with positive amounts recorded for this variable.

Veteran status **VETERAN**

Indicates student's veteran status (Yes/No). Derived by examining student-reported veteran status from the FAFSA, institution-reported veteran status, student-reported veteran status (asked on student CATI), and whether the students received any veterans' benefits or aid.

Visual impairment **VISUAL**

If student reported a disability, indicates whether student had visual limitations in 1995–96. For complete description, see DISABIL. Asked on student CATI (Yes/No).

NELS:88/94

Composite test quartile 1988 **BY2XQURT**

Student's eighth grade reading and math test score composite, standardized and broken into quartiles.

Low quartile	Scores were in the bottom 25 percent.
Middle quartiles	Scores were in the middle 50 percent.
High quartile	Scores were in the top 25 percent.

Educational expectations 1988 **BYS45**

This variable was asked in the 1988 survey: "As things stand now, how far in school do you think you will get?" The options included the following:

No degree
Trade school
Some college
Finish college
Advanced degree

In the report, the options of "trade school" and "some college" were combined and called "some college" and the "finished college" and "advanced degree" were combined into "bachelor's degree or higher."

Qualified for 4-year college **CQCOMV1**

A composite measure of 4-year college readiness or qualification index based on high school GPAs, senior class rank, the NELS 1992 test scores, and the SAT and ACT college entrance examination scores. Since admission standards and requirements vary widely among 4-year colleges and universities, the index was based on the actual distribution of these five measures of academic aptitude and achievement among those graduating seniors who attended a 4-year college or university. Data sources were available for approximately half (45 percent) of the NELS graduating seniors for four or five of the criteria: class rank, GPA, the NELS test, and ACT or SAT scores or both. For about one-third of the seniors there were only three data sources available because they had no ACT or SAT scores. All of these had NELS test scores, however. In order to identify as many students as possible who were potentially academically qualified for a 4-year college, even if data were missing for these students on some of the criteria, the seniors were classified according to the highest level they had achieved on any of the five criteria for which data were present. In a small percentage of cases (10 percent) students who enrolled in a 4-year college were coded as not qualified. They were re-coded as minimally qualified.

The initial classification of the graduating seniors was determined as follows:

- Highly qualified: those whose highest value on any of the five criteria would put them among the top 10 percent of 4-year college students (specifically the NELS 1992 graduating seniors who enrolled in 4-year colleges and universities) for that criterion. Minimum values were GPA=3.7, class rank percentile=96, NELS test percentile=97, combined SAT=1250, composite ACT=28.

- Very qualified: those whose highest value on any of the five criteria would put them among the top 25 percent of 4-year college students for that criterion. Minimum values were GPA=3.6, class rank percentile=89, NELS test percentile=90, combined SAT=1110, composite ACT=25.

- Somewhat qualified: those whose highest value on any of the five criteria would put them among the top 50 percent (i.e., in the second quartile) of 4-year college students for that criterion. Minimum values were GPA=3.2, class rank percentile=75, NELS test percentile=76, combined SAT=960, composite ACT=22.

- Minimally qualified: those whose highest value on any of the five criteria would put them among the top 75 percent (i.e., in the third quartile) of 4-year college students for that criterion. Minimum values were GPA=2.7, class rank percentile=54, NELS test percentile=56, combined SAT=820, composite ACT=19. [Those in vocational programs (according to their high school transcript) were classified as not college qualified.]

- Not qualified: those who had no value on any criterion that would put them among the top 75 percent of 4-year college students (i.e., all values were in the lowest quartile). In a few instances either because of missing data or because students were considered special admissions, students who were identified as not qualified were enrolled in 4-year institutions. These students were re-coded as minimally qualified.

In this report, the minimally and somewhat qualified individuals were combined and the very and highly qualified groups were combined.

Any disabilities **DISABIL**

This variable is a composite of all other NELS:88/94 disability variables. Students were considered to have a disability if they had positive values for any one of the following variables: VISUAL, HEARING, SPEECH, ORTHO, LEARNDIS, OTHERDIS. In each case, whether or not a student had a disability was based on the parent's response in 1988. The parent was asked: 1) In your opinion, does your eighth grader have any of the following problems? and 2) has your eighth grader ever received special services for any or all of the following? Students were considered to have a disability if parents responded that students had one or more disabilities *and* had received services for the disability/disabilities.

Does not have a disability
Has a disability

Course taking **F2S13A–F2S13C**

Asked of the 1988 eighth graders in the second follow-up survey, these variables identify 5 kinds of courses or programs the student had participated in during high school. This report used the first 3 types.

Ever took remedial English
Ever took remedial mathematics
Ever took AP (advanced placement) course

Type of first postsecondary institution **F3SEC2A1**

Type of first institution attended. In this report, this variable was used for two purposes: 1) to denote whether a student had ever enrolled in postsecondary education; and 2) to describe the type of postsecondary institution the 1988 eighth grader first enrolled in.

Did not enroll	Student had not enrolled in any postsecondary institution.
Ever enrolled in college	Student enrolled in a postsecondary institution.

Public, 4-year	Student's first postsecondary institution was a public, 4-year college or university.
Private, not-for-profit, 4-year	Student's first postsecondary institution was a private, not-for-profit, 4-year college or university.
Public, 2-year	Student's first postsecondary institution was a public, 2-year college or university.
Other	Student's first postsecondary institution was either a private, for-profit institution, a less-than-2-year institution, or a private, not-for-profit, less-than-4-year institution.

Grade point average (high school transcripts) **GPA**

This variable is the overall grade point average for all high school courses taken for a grade.

Less than 2.3
2.3–2.7
2.8–3.2
3.3–3.7
Higher than 3.7

Hearing impairment or deaf **HEARING**

Parent reported student has a hearing impairment or is deaf and had received services for disability. For details, please see DISABIL.

Learning disability **LEARNDIS**

Students were considered to have a learning disability if parents responded that student had a specific learning problem (for example, dyslexia or other reading, spelling, writing, or math disability) *and* had received services for this. For details, please see DISABIL.

Orthopedic impairment **ORTHO**

Students were considered to have an orthopedic impairment if parents responded that student had an orthopedic problem (for example, club foot, absence of arm or leg, cerebral palsy, amputation, polio) *and* had received services for this. For details, please see DISABIL.

Other health-related disability **OTHERDIS**

Students were considered to have another health-related disability if parents responded that student had either another physical disability, an emotional problem, mental retardation, or other health problem *and* had received services for this. For details, please see DISABIL.

Cumulative SAT score **SAT**

This variable is the combined scores of SAT verbal and math scores. It was calculated only if both SAT math and SAT verbal scores were valid. If either was missing, SAT was set to missing.

Below 800
800–999
1000–1199
1200–1399
1400–1600

SAT math **SATM**

Scholastic Aptitude Test (mathematics) score. The valid range for this test score is 200 to 800.

SAT verbal **SATV**

Scholastic Aptitude Test (verbal) score. The valid range for this test score is 200 to 800.

Speech impairment **SPEECH**

Students were considered to have a speech impairment if parents responded that student had a speech problem *and* had received services for this. For details, please see DISABIL.

Visual impairment **VISUAL**

Students were considered to have a visual impairment if parents responded that student had a vision handicap (not correctable by glasses) *and* had received services for this. For details, please see DISABIL.

BPS:90/94

Attendance status **ATTN8990**

Intensity of enrollment during the month when the student began at the referent institution. Used to determine part-time enrollment.

Hearing impaired or deaf **DEAFNESS**

Students were asked in the 1990 NPSAS CATI if they had a hearing impairment (Yes/No). See DISABLTY for a complete description.

Highest undergraduate degree **DEGALL**

Highest undergraduate degree attained as of 1994.

None — Student did not attain any degrees during postsecondary education or they were still enrolled.

Certificate	Student attained a certificate or other formal award less than an associate's degree during postsecondary education.
Associate's degree	Student attained an associate's degree during postsecondary education.
Bachelor's degree	Student attained a bachelor's degree during postsecondary education.

Delayed enrollment **DELAYENR**

Students who did not enter postsecondary education in the same calendar year as high school graduation were considered to have delayed their enrollment. Students who did not graduate from high school, but received a GED or a certificate of high school completion, were also considered to have delayed enrollment. Most of these students were GED recipients, a majority of whom received their GED a year or more after leaving high school. Thus even if these students entered postsecondary education in the same calendar year as they received their GED, they were still considered to have delayed because of the elapsed time from leaving high school. In a very small number of cases (less than 0.2 percent) students may have earned a certificate of completion before or at the expected time of high school graduation (i.e., they were 18 or younger).

Financial independence **DEP8990**

An independent student was one who was not claimed as an exemption on his or her parents' 1988 federal income tax return.

Any disabilities **DISABLTY**

Students were asked in the 1990 NPSAS CATI if they had functional limitations, disabilities, or handicaps (Yes/No). This includes hearing impairment, speech disability, orthopedic or mobility limitation, learning disability, vision impairment that cannot be corrected by glasses, and other disabilities. If the student was not interviewed and the financial aid budget included an allowance of handicapped, they were considered to have a disability.

Worked full time while enrolled **EMWK8990**

Students were identified as working full time while enrolled if the average number of hours/week they worked while enrolled was 34 or more. Positive values on these variables are also used to identify the percentage of students who worked full time while enrolled.

Type of high school completion **H_HSDIP**

Indicates the type of high school completion.

High school diploma	Student graduated with a high school diploma.
GED or alternative credential	Student compfeted high school by passing The General Education Development Exam or by earning an alternative credential.

Other impairment or disability **HEALTOTH**

Students were asked in the 1990 NPSAS CATI if they had any other functional limitations, disabilities or handicaps (Yes/No). See DISABLTY for a complete description.

Number of children **KIDS8990**

Student had one or more children in 1989–90 living with him or her during month he or she began postsecondary education in 1989–90.

Learning disability **LEARNDIS**

Students were asked in the 1990 NPSAS CATI if they had a specific learning disability (Yes/No). See DISABLTY for a complete description.

Institution sector **OFCO8990**

Public, 4-year	A postsecondary education institution that is supported primarily by public funds and operated by publicly elected or appointed officials who control the programs and activities. Institutions award bachelor's degrees and can award doctorate degrees and first-professional degrees. These degrees include chiropractic, pharmacy, dentistry, podiatry, medicine, veterinary medicine, optometry, law, osteopathic medicine, and theology.
Private, not-for-profit, 4-year	A postsecondary institution that is controlled by an independent governing board and incorporated under Section 501(c)(3) of the Internal Revenue Code and can award bachelor's degrees or higher, including institutions that award doctorate degrees and first-professional degrees. These degrees include chiropractic, pharmacy, dentistry, podiatry, medicine, veterinary medicine, optometry, law, osteopathic medicine, and theology.
Public, 2-year	A postsecondary institution that is supported primarily by public funds and operated by publicly elected or appointed officials who control the programs and activities. Institution that does not confer bachelor's degrees, but does provide 2-year programs that result in a certificate or an associate's degree, or 2-year programs that fulfill part of the requirements for a bachelor's degree or higher at a 4-year institution.
Other	Includes private, not-for-profit, 2-to 3-year or less-than-2-year institutions, public, less-than-2-year institutions, or private, for-profit institutions.

Orthopedic impairment **ORTHO**

Students were asked in the 1990 NPSAS CATI if they had an orthopedic or mobility limitation (Yes/No). See DISABLTY for a complete description.

Overall persistence and attainment **PERACUM**

Overall persistence and attainment until attainment of first degree (if any) or last enrollment as of spring 1994. For all students, attainment of first degree was given priority. If students had not attained a degree their enrollment status was examined. Students were defined as still enrolled at the time of follow-up if they were enrolled during the spring of 1994.

The 12 outcome categories of PERACUM were combined into three groups to create the categories discussed in the report.

Attained degree	Although the student may have transferred or had some form of noncontiguous enrollment, a degree was attained.
Still enrolled	Student was still enrolled in postsecondary. Includes those who may have transferred or those for whom degree attainment information was not available.
Not enrolled/left without return	Regardless of transfer status, student had not attained a degree and was either not enrolled or had left college without return.

Single parent status **SING8990**

Single parent status during month began postsecondary education. Students were considered single parents if they reported having children but were unmarried, divorced, widowed, or separated.

Speech impairment **SPEECH**

Students were asked in the 1990 NPSAS CATI if they had a speech disability or limitation (Yes/No). See DISABLTY for a complete description.

Visual impairment **VISUAL**

Students were asked in the 1990 NPSAS CATI if they had visual impairment not correctable by glasses or if they were legally blind (Yes/No). See DISABLTY for a complete description.

B&B:93/94

Number of graduate schools accepted **ACCEPT**

Among respondents who applied to graduate school, the average number of institutions at which they reported being accepted.

April 1994 job occupation **AJOBOCC**

Occupation code for respondents' April 1994 primary (i.e., most hours) job.

Clerical	Includes secretaries, clerical workers in finance and other clerical workers.
Craft/skilled operative/technical	Includes those in craft, precision production, repairs, skilled operatives, and technical workers, both computer related and non-computer related.
Farmer	
Laborer	
Manager/administrator	Includes managers and administrators in sales, purchasing, government, retail, hospitality, manufacturing, construction, and other fields.
Military/protective service	
Professional/teacher	Includes professionals in the arts, entertainment, media, medical, legal, and other fields. Also includes engineers, physicians, and school teachers.
Proprietor/owner	Includes proprietors/owners in retail, hospitality, manufacturing, construction or other fields.
Sales	Includes all sales positions, advertisers, auctioneers, insurance agents, real estate agents, and brokers.
Service	Includes domestics, barbers, janitors, waiters/waitresses, attendants, nursing aides, baggage porters, bellhops, orderlies, housekeepers, hairdressers, paper carriers, child care workers, launderers, bootblacks, and lifeguards.
Other	Includes homemakers and those who were not working.

How closely April 1994 job related to field of study **AJOBRELT**

Respondents were asked how closely their job was related to their field of study.

Closely related
Somewhat related
Not at all related

Average annual salary at April 1994 job **APRANSAL**

Respondent's annual salary based on their primary employment in April 1994. This composite was constructed by multiplying the sum of the salary per pay period by the number of pay periods a year.

Hearing impaired or deaf **DEAFNESS**

Students were asked in the 1993 NPSAS CATI if they had a hearing impairment (Yes/No). See DISABLTY for a complete description.

Any disabilities **DISABLTY**

Students were asked in the 1993 NPSAS CATI if they had functional limitations, disabilities, or handicaps (Yes/No). This includes hearing impairment, speech disability, orthopedic or mobility limitation, learning disability, vision impairment that cannot be corrected by glasses, and other disabilities. If the student budget included an allowance of handicapped, then the student was considered to have a disability, if the student was not interviewed.

Employment status in April 1994 **EMPLOY22**

Indicates student employment status in April 1994.

Employed full-time	Graduate worked 35 hours or more per week.
Employed part-time	Graduate worked less than 35 hours per week.
Unemployed	Graduate was not working and was looking for work.
Out of the labor force	Graduate was not working and not looking for work.

Graduate school enrollment **ENROLNOW**

Indicates the respondent's enrollment status in April 1994.

Enrolled in graduate school
Enrolled in nongraduate program
Not enrolled

Respondent applied to graduate school **EVERAPP**

Indicates whether a respondent ever applied to a graduate school (Yes/No).

Other impairment or disability **HEALTOTH**

Students were asked in the 1993 NPSAS CATI if they had any other type of limitations, disabilities, or handicaps (Yes/No). See DISABLTY for a complete description.

Learning disability **LEARNDIS**

Students were asked in the 1993 NPSAS CATI if they had a specific learning disability (Yes/No). See DISABLTY for a complete description.

Orthopedic impairment **ORTHO**

Students were asked in the 1993 NPSAS CATI if they had an orthopedic or mobility limitation (Yes/No). See DISABLTY for a complete description.

Speech impairment **SPEECH**

Students were asked in the 1993 NPSAS CATI if they had a speech disability or limitation (Yes/No). See DISABLTY for a complete description.

Visually impaired or blind **VISUAL**

Students were asked in the 1993 NPSAS CATI if they had a vision impairment that cannot be corrected with glasses or were legally blind (Yes/No). See DISABLTY for a complete description.

Appendix D—Technical Notes and Methodology

The National Educational Longitudinal Study of 1988 (NELS:88/94)

The National Education Longitudinal Study of 1988 (NELS:88/94) is a survey that began with a nationally representative sample of 1988 eighth graders and followed them every 2 years. The most recent follow-up survey occurred in 1994. Respondents' teachers and schools were also surveyed in 1988, 1990, and 1992, while parents were surveyed in 1988 and 1992. In contrast to previous longitudinal studies, NELS:88/94 began with eighth graders in order to collect data regarding the transition from elementary to secondary education. The first follow-up in 1990 provided the data necessary to understand the transition. Dropouts were administered a special survey to understand the dropout process more thoroughly. For the purpose of providing a comparison group to 1980 sophomores surveyed in High School and Beyond, the NELS:88/94 sample was also "freshened" with new participants who were 10th graders in 1990.

In spring of 1992, when most of the NELS:88/94 sample were twelfth graders, the second follow-up took place. This survey focused on the transition from high school to the labor force and postsecondary education. The sample was also "freshened" in order to create a representative sample of 1992 seniors for the purpose of conducting trend analyses with the 1972 and 1982 senior classes (National Longitudinal Study of 1972 and High School and Beyond). Students identified as dropouts in the first follow-up were also resurveyed in 1992. In spring of 1994, the third follow-up was administered. Sample members were questioned about their labor force and postsecondary experiences, and family formation. For more information about the NELS:88/94 survey, consult the NELS:88/94 Methodology Report.[15]

The 1995–96 National Postsecondary Student Aid Study (NPSAS:96)

The 1995–96 National Postsecondary Student Aid Study (NPSAS:96) is a comprehensive nationwide study representing approximately 16.7 million undergraduates. The study is conducted by NCES to determine how students and their families pay for postsecondary education. It also describes the demographic and other characteristics of students enrolled. The study is based

[15]U.S. Department of Education, National Center for Education Statistics, *National Education Longitudinal Study (NELS:88/94) Methodology Report*, (NCES 96-174) (Washington D.C.: 1996).

on a nationally representative sample of approximately 41,400 undergraduates (including 27,000 student interviews) enrolled in more than 830 postsecondary education institutions. Students attending all types and levels of institutions are represented in the sample, including public and private institutions and less-than-2-year institutions, 2-year institutions, and 4-year colleges and universities. The weighted effective response rate for the telephone interviews was 76.2 percent. The study is designed to address the policy questions resulting from the rapid growth of financial aid programs, and the succession of changes in financial aid program policies since 1986. The first NPSAS study was conducted in 1986–87, then again in 1989–90 and 1992–93.[16]

Beginning Postsecondary Student Longitudinal Study (BPS:90/94)

The Beginning Postsecondary Student Longitudinal Study (BPS) follows NPSAS:90 students who enrolled in postsecondary education for the first time in 1989–90. The first follow-up was conducted in spring 1992 and the second in spring 1994. BPS collected information from students on their persistence, progress, and attainment and on their labor force experience using a CATI. Approximately 8,000 students were included in the BPS sample with an overall response rate of 91 percent.

Unlike other NCES longitudinal surveys (such as High School and Beyond) which are based on age-specific cohorts, the BPS sample is more likely to include some of the increasing numbers of "nontraditional" postsecondary students, such as those who have delayed their education due to financial needs or family responsibilities. Students who began their postsecondary studies during some other period and then returned to them in 1989–90, however, were not included, nor were those who were still enrolled in high school.

Baccalaureate and Beyond Longitudinal Study[17] (B&B:93/94)

The Baccalaureate and Beyond Longitudinal Study (B&B:93/94) tracks the experiences of a cohort of college graduates who received the bachelor's degree during the 1992–93 academic year. This group's experiences in the areas of further education and degree completion, employment, public service, family formation, and other adult decisions will be followed for 12 years. B&B:93/94 will provide data to assess the outcomes of postsecondary education, including graduate and professional program access, labor market experience, and rates of return on investment in education.

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[16]For more information on the NPSAS survey, consult U.S. Department of Education, National Center for Education Statistics, *Methodology Report for the 1995–96 National Postsecondary Student Aid Study* (NCES 98-073) (Washington, D.C.: 1998).

[17]The text in this section is based on excerpts from *Baccalaureate and Beyond Longitudinal Study: 1993/94 Methodology Report* (Washington, DC: U.S. Department of Education, National Center for Education Statistics, forthcoming).

Participants in the 1993 National Postsecondary Student Aid Study (NPSAS:93) who received their bachelor's degree between July 1992 and June 1993 form the base sample for the B&B study. Approximately 12,500 NPSAS:93 respondents were identified as eligible for the first follow-up survey, which was conducted between July 1993 and December 1994 (roughly 1 year after participants' graduation). Approximately 1,500 members of this initial sample were determined to be ineligible at the time of the follow-up interview, and about 900 others were not interviewed (usually because they could not be located or refused to participate), generating a final interviewed sample of 10,080 college graduates. An overall response rate of 92 percent was achieved for the first follow-up survey.

Accuracy of Estimates

The statistics in this report are estimates derived from a sample. Two broad categories of error occur in such estimates: sampling and nonsampling errors. Sampling errors occur because observations are made only on samples of students, not on entire populations. Nonsampling errors occur not only in sample surveys but also in complete censuses of entire populations. Nonsampling errors can be attributed to a number of sources: inability to obtain complete information about all students in all institutions in the sample (some students or institutions refused to participate, or students participated but answered only certain items); ambiguous definitions; differences in interpreting questions; inability or unwillingness to give correct information; mistakes in recording or coding data; and other errors of collecting, processing, sampling, and imputing missing data.

Data Analysis System

The estimates presented in this report were produced using the NELS:88/94, NPSAS:96, BPS:90/94, and B&B:93/94 Data Analysis Systems (DAS). The DAS software makes it possible for users to specify and generate their own tables from these data sources. With the DAS, users can replicate or expand upon the tables presented in this report. In addition to the table estimates, the DAS calculates proper standard errors[18] and weighted sample sizes for these estimates. For example, tables D1 and D2 contain standard errors that correspond to tables 2 and 20 in the text, and were generated by the DAS. If the number of valid cases is too small to produce a reliable estimate (fewer than 30 cases), the DAS prints the message "low-N" instead of the estimate.

[18]The samples in these surveys are not simple random samples, and therefore, simple random sample techniques for estimating sampling errors cannot be applied to these data. The DAS takes into account the complexity of the sampling procedures and calculates standard errors appropriate for such samples. The method for computing sampling errors used by the DAS involves approximating the estimator by the linear terms of a Taylor series expansion. The procedure is typically referred to as the Taylor series method.

Table D1—Standard errors for table 2: Percentage of 1995–96 undergraduates who reported a disability and among those with disabilities, the percentages by disability type, by selected student characteristics

		Has a disability					
	Total with a disability	Visual impairment	Hearing impairment or deaf	Speech impairment	Orthopedic impairment	Learning disability	Other disability or impairment*
Total	0.27	2.05	1.92	0.72	1.86	1.98	2.39
Gender							
Male	0.44	2.21	2.78	1.31	2.59	2.63	3.77
Female	0.31	3.51	2.09	0.59	2.62	2.90	3.02
Race–ethnicity							
White, non-Hispanic	0.35	2.28	2.24	0.61	2.07	2.38	2.75
Black, non-Hispanic	0.55	3.89	4.37	1.01	6.55	4.78	9.12
Hispanic	0.69	5.43	8.33	6.16	5.29	6.33	5.43
Asian/Pacific Islander	0.66	—	—	—	—	—	—
American Indian/Alaskan Native	4.56	—	—	—	—	—	—
Income quartile							
Low quartile	0.49	2.39	1.76	2.02	3.31	3.73	3.72
Middle quartiles	0.43	3.50	3.04	0.67	2.69	2.97	4.05
High quartile	0.49	3.41	3.76	1.56	3.84	3.81	2.75

—Sample size too small for a reliable estimate.

*Student reported having other health-related disabilities or limitations.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study (NPSAS:96), Undergraduate Data Analysis System.

In addition to tables, the DAS will also produce a correlation matrix of selected variables to be used for linear regression models. Included in the output with the correlation matrix are the design effects (DEFTs) for each variable in the matrix. Since statistical procedures generally compute regression coefficients based on simple random sample assumptions, the standard errors must be adjusted with the design effects to take into account the stratified sampling methods of these surveys. (See discussion under "Statistical Procedures" below for the adjustment procedure.)

The DAS can be accessed electronically at www.PEDAR-DAS.org. For more information about the NELS:88/94, NPSAS:96, BPS:90/94, or B&B:93/94 Data Analysis Systems, contact:

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Table D2—Standard errors for table 20: Percentage of 1988 eighth graders according to high school completion status as of 1994, by disability status and type

	1994 high school diploma status			
	High school diploma	GED or equivalent certificate	Enrolled in high school/working toward GED	Dropped out
Total	0.71	0.46	0.32	0.48
Does not have a disability	0.75	0.51	0.32	0.53
Has a disability	1.92	0.89	1.41	1.23
Visual impairment	5.97	3.78	5.05	1.22
Hearing impairment or deaf	5.12	3.72	4.14	1.78
Speech impairment	3.02	1.22	2.06	2.03
Orthopedic impairment	6.66	1.23	2.44	6.64
Learning disability	2.79	1.44	1.79	1.85
Other disability or impairment*	3.60	1.24	3.02	2.36

*Parent reported student had any other disability including health problems, emotional problems, mental retardation, or other physical disabilities and had received services for it.

NOTE: GED refers passing the General Education Development exam.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Third Follow-up Survey 1994 (NELS:88/94), Data Analysis System.

Statistical Procedures

Differences Between Means

The descriptive comparisons were tested in this report using Student's t statistic. Differences between estimates are tested against the probability of a Type I error, or significance level. The significance levels were determined by calculating the Student's t values for the differences between each pair of means or proportions and comparing these with published tables of significance levels for two-tailed hypothesis testing.

Student's t values may be computed to test the difference between estimates with the following formula:

$$t = \frac{E_1 - E_2}{\sqrt{se_1^2 + se_2^2}} \qquad (1)$$

where E_1 and E_2 are the estimates to be compared and se_1 and se_2 are their corresponding standard errors. Note that this formula is valid only for independent estimates. When the estimates were not independent (for example, when comparing the percentages across a percentage distribution), a covariance term was added to the denominator of the t-test formula.

There are hazards in reporting statistical tests for each comparison. First, comparisons based on large *t* statistics may appear to merit special attention. This can be misleading, since the magnitude of the *t* statistic is related not only to the observed differences in means or percentages but also to the number of students in the specific categories used for comparison. Hence, a small difference compared across a large number of students would produce a large *t* statistic.

A second hazard in reporting statistical tests for each comparison occurs when making multiple comparisons among categories of an independent variable. For example, when making paired comparisons among different levels of income, the probability of a Type I error for these comparisons taken as a group is larger than the probability for a single comparison. When more than one difference between groups of related characteristics or "families" are tested for statistical significance, one must apply a standard that assures a level of significance for all of those comparisons taken together.

Comparisons were made in this report only when $p \leq .05/k$ for a particular pairwise comparison, where that comparison was one of k tests within a family. This guarantees both that the individual comparison would have $p \leq .05$ and that for k comparisons within a family of possible comparisons, the significance level for all the comparisons will sum to $p \leq .05$.[19]

For example, in a comparison of the percentages of males and females who enrolled in postsecondary education only one comparison is possible (males versus females). In this family, $k=1$, and the comparison can be evaluated without adjusting the significance level. When students are divided into five racial–ethnic groups and all possible comparisons are made, then $k=10$ and the significance level of each test must be $p \leq .05/10$, or $p \leq .005$. The formula for calculating family size (k) is as follows:

$$k = \frac{j(j-1)}{2} \qquad (2)$$

where j is the number of categories for the variable being tested. In the case of race–ethnicity, there are five racial–ethnic groups (American Indian/Alaskan Native, Asian/Pacific Islander, black non-Hispanic, Hispanic, and white non-Hispanic), so substituting 5 for j in equation 2,

$$k = \frac{5(5-1)}{2} = 10$$

[19]The standard that $p \leq .05/k$ for each comparison is more stringent than the criterion that the significance level of the comparisons should sum to $p \leq .05$. For tables showing the *t* statistic required to ensure that $p \leq .05/k$ for a particular family size and degrees of freedom, see Olive Jean Dunn, "Multiple Comparisons Among Means," *Journal of the American Statistical Association* 56: 52–64.

Adjustment of Means to Control for Background Variation

Tabular results are limited by sample size when attempting to control for additional factors that may account for the variation observed between two variables. For example, when examining the percentages of those who completed a degree or were still enrolled in postsecondary education 5 years after their initial enrollment, it is impossible to know to what extent the observed variation is due to socioeconomic status (SES) differences and to what extent it is due to differences in other factors related to SES, such as type of institution attended, intensity of enrollment, and so on. However, if a nested table were produced showing SES within type of institution attended within enrollment intensity, the cell sizes would be too small to identify the patterns. When the sample size becomes too small to support controls for another level of variation, one must use other methods to take such variation into account.

To overcome this difficulty, multiple linear regression was used to obtain means that were adjusted for covariation among a list of control variables.[20] Adjusted means for subgroups were obtained by regressing the dependent variable on a set of descriptive variables such as gender, race–ethnicity, SES, and so on. Substituting ones or zeros for the subgroup characteristic(s) of interest and the mean proportions for the other variables results in an estimate of the adjusted proportion for the specified subgroup, holding all other variables constant. For example, consider a hypothetical case in which two variables, age and gender, are used to describe an outcome, Y (such as attaining a degree). The variables age and gender are recoded into a dummy variable representing age, A, and a dummy variable representing gender, G:

Age	A
24 years or older	1
Under 24 years old	0
Gender	G
Female	1
Male	0

The following regression equation is then estimated from the correlation matrix output from the DAS:

$$\hat{Y} = a + b_1 A + b_2 G \qquad (3)$$

[20]For more information about least squares regression, see Michael S. Lewis-Beck, *Applied Regression: An Introduction*, Vol. 22 (Beverly Hills, CA: Sage Publications, Inc., 1980); William D. Berry and Stanley Feldman, *Multiple Regression in Practice*, Vol. 50 (Beverly Hills, CA: Sage Publications, Inc., 1987).

where Y is the adjusted mean (or percentage); a is the intercept from the regression model; b_1 is the regression coefficient of the dummy variable representing age; and b_2 is the regression coefficient representing gender. To estimate the adjusted mean for any subgroup evaluated at the mean of all other variables, one substitutes the appropriate values for that subgroup's dummy variables (1 or 0) and the mean for the dummy variable(s) representing all other subgroups. For example, suppose Y represents degree attainment and is being described by age (A) and gender (G), with means as follows:

Variable	*Mean*
A	0.355
G	0.521

Next, suppose the regression equation results in:

$$\hat{Y} = 0.15 + 0.17A + 0.01G$$

To estimate the adjusted value for older students, one substitutes the appropriate parameter estimates and variable values into equation 3.

Variable	Parameter	Value
a	0.15	—
A	0.17	1.000
G	0.01	0.521

This results in:

$$\hat{Y} = 0.15 + (0.17)(1) + (0.01)(0.521) = 0.325$$

In this case, the adjusted mean for older students is 0.325, and it represents the expected chance of degree attainment for older students who look like the average student across the other variables (in this example, gender). In other words, the adjusted percentage of students 24 or older who attained a degree after controlling for gender is 32.5 percent (0.325 x 100 for conversion to a percentage).

One can produce a multivariate model using the DAS, since one of the DAS output options is a correlation matrix, computed using pairwise missing values and weighted to account for sampling design and nonresponse.[21] This matrix can be used by most statistical software

[21] Although the DAS simplifies the process of making regression models, it also limits the range of models. Analysts who wish to use other than pairwise treatment of missing values or to estimate probit/logit models (which are the most appropriate for models with categorical dependent variables) can apply for a restricted data license from NCES. See John H. Aldrich and Forrest D. Nelson, *Linear Probability, Logit and Probit Models* (Quantitative Applications in Social Sciences, Vol. 45) (Beverly Hills, CA: Sage, 1984).

packages as the input data for least-squares regression. That is the approach used for this report, with an additional adjustment to incorporate the complex sample design into the statistical significance tests of the parameter estimates (described below). For tabular presentation, parameter estimates and standard errors were multiplied by 100 to match the scale used for reporting unadjusted and adjusted percentages.

Most statistical software packages assume simple random sampling when computing standard errors of parameter estimates. Because of the complex sampling design used for the BPS survey, this assumption is incorrect. A better approximation of their standard errors is to multiply each standard error by the design effect associated with the dependent variable (DEFT),[22] where the DEFT is the ratio of the true standard error to the standard error computed under the assumption of simple random sampling. It is calculated by the DAS and is part of the correlation matrix output file.

[22]The adjustment procedure and its limitations are described in C.J. Skinner, D. Holt, and T.M.F. Smith, eds., *Analysis of Complex Surveys* (New York: John Wiley & Sons, 1989).

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